1974 ANNUAL REPORT

DEPARTMENT OF MINES, QUEENSLAND

1975

QUEENSLAND

1974

ANNUAL REPORT

OF THE

UNDER SECRETARY

FOR

MINES

TO

THE HONOURABLE R. E. CAMM, M.L.A.

MINISTER FOR MINES AND ENERGY

INCLUDING THE REPORTS

OF

THE WARDENS

INSPECTORS OF MINES

GOVERNMENT GEOLOGISTS

AND OTHER OFFICERS

PRESENTED TO PARLIAMENT BY COMMAND

Brisbane
By Authority: S. G. Reid, Government Printer.

A. 11—1975.

METRIC CONVERSION

This report has been prepared in metric units in accordance with the programme for metric conversion in Australia. The following conversion factors are given for reference. The number of figures to be used in the conversion depends on the precision required in the result.

CONVERSION FACTORS

Length—

1 foot (ft)	= 0·304 8 metre (m)
1 metre (m)	= 3·280 84 feet (ft)
1 yard (yd)	= 0·914 4 metre (m)
1 metre (m)	= 1·093 61 yards (yd)
1 mile (ml)	= 1·609 344 kilometres (km)
1 kilometre (km)	= 0·621 371 mile (ml)

Area—

1 square foot (sq ft)	= 0·092 903 04 sq metre (sq m)
1 square metre (sq m)	= 10·763 9 square feet (sq ft)
1 acre (ac)	= 0·404 685 642 hectare (ha)
1 hectare (ha)	= 2·471 05 acres (ac)
1 square mile (sq ml)	= 2·589 988 110 sq kilometres (sq km)
1 square kilometre (sq km)	= 0·386 102 square mile (sq ml)

Volume—

1 cubic foot (cu ft)	= 0·028 316 847 cubic metre (cu m)
1 cubic metre (cu m)	= 35·314 666 cubic feet (cu ft)
1 cubic yard (cu yd)	= 0·764 554 858 cubic metre (cu m)
1 cubic metre (cu m)	= 1·307 95 cubic yards (cu yd)

Mass—

1 ounce fine (oz fine) Troy	= 0·031 103 48 kilogram (kg)
1 kilogram (kg)	= 32·150 746 569 (oz fine) troy
1 pound (lb)	= 0·453 592 37 kilogram (kg)
1 kilogram (kg)	= 2·204 62 pounds (lb)
1 ton	= 1·016 046 909 tonnes (t)
1 tonne (t)	= 0·984 207 ton

Grade of Ore—

1 oz (troy)/long ton	= 30·612 244 898 grams/tonne (g/t)
1 gram/tonne (g/t)	= 0·032 666 667 oz (troy)/long ton
1 dwt/long ton	= 1·530 612 245 g/t
1 g/t	= 0·653 333 333 dwt/long ton

Concentration of Reagent—

1 lb/long ton	= 0·446 428 571 kg/t
1 kg/t	= 2·24 lb/long ton

Fuel Consumption—

1 gal/ton	= 4·474 291 453 litre/tonne (l/t)
1 l/t	= 0·223 499 075 gal/ton

Other—

1 barrel (oil U.S.)	= 0·158 987 295 cubic metre (cu m)
1 cu m	= 6·289 810 768 barrels (oil U.S.)
1 barrel (crude oil API44)	= 0·128 tonne
1 tonne	= 7·812 5 barrels (crude oil API44)

ANNUAL REPORT OF THE DEPARTMENT OF MINES, 1974

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REPORT OF THE DEPARTMENT OF MINES, QUEENSLAND FOR THE YEAR 1974

TO THE HONOURABLE R. E. CAMM, M.L.A., MINISTER FOR MINES AND ENERGY

SIR.—I have the honour to present my report on the activities of the mining industry in Queensland and concerning the operations of the Department of Mines for the year 1974.

The value of mineral production in Queensland for the year 1974 totalled $690 537 688 compared with $515 536 213 for 1973.

Gold

Gold production in Queensland for 1974 totalled 2 267·04 kg which was an increase of 404·07 kg when compared with production for the previous year. Again the main producers were Mount Morgan and Cracow mines, with only small amounts being produced in other mining districts. Although there were some fluctuations in prices during the year, at the end of 1974 the Australian price per fine ounce was significantly higher than the price recorded at the beginning of the year. The value of the gold at the Reserve Bank price amounted to $2 143 183 and premiums totalling $1 259 919 were paid by Gold Producers Association Limited to members in Queensland for 1974.

Copper

Although prices for copper fell rapidly during the second half of the year, copper production for 1974 was the highest ever recorded. Total production for the year was 175 369 tonnes valued at $226 174 980 compared with 146 640 tonnes valued at $180 131 241 for 1973.

Lead

Lead production for the year totalled 120 214 tonnes. This was 5 809 tonnes less than the total for 1973. However due to higher prices recorded during the year the value of lead for 1974 amounted to $49 168 942 which was $11 168 637 more than the value for 1973.

Zinc

Zinc production for 1974 amounted to 103 051 tonnes valued at $55 677 425. Although production decreased by 5 058 tonnes when compared with that for 1973, due to the significant increase in price for this metal, the total recorded value rose by $15 567 530.

Tin

Tin production for 1974 was slightly less than that recorded in 1973. However the value of production was much higher due to increased prices. A total of 2 356 tonnes of concentrates valued at $7 083 687 was produced in 1974 compared with 2 588 tonnes for $4 947 846 in 1973.

Silver

Silver production for 1974 was 331 058 kg valued at $34 504 342 compared with 305 033 kg for $16 708 163 produced in 1973. As in the case of other minerals the considerable rise in price during the year resulted in a large increase in the value of production over the previous year.

Zircon, Rutile etc.

Increased production and values were recorded for mineral sands during 1974. Rutile production for the year totalled 122 641 tonnes valued at $20 904 340 and there were 113 183 tonnes of zircon produced for $12 085 890. Twenty-seven tonnes of monazite were produced valued at $3 420. Sales of ilmenite recorded were 39 237 tonnes valued at $333 307.

Bauxite

There was a further increase in bauxite production, a total of 9 267 906 tonnes being mined during the year compared with 8 980 832 tonnes for the previous year.

Coal

An increase was again recorded in coal production with a total of 21 085 029 tonnes being produced valued at $210 758 501. Further expansion is planned with a much higher production expected in future years.

Petroleum

Production from the Moonie, Alton and Bennett fields continued to decline. During 1974, 62 342 tonnes of crude oil valued at $1 048 996 were sold (85 427 tonnes for $1 434 910 in 1973). A total of 2 794 tonnes of condensate from the Roma fields valued at $34 118 was also sold in 1974. (2 167 tonnes valued at $27 083 in 1973.) The oil and condensate was moved to Brisbane through the Moonie to Brisbane pipeline.

Natural gas output for 1974 was 289 322 000 cubic metres valued at $1 756 668 (272 149 000 cubic metres valued at $1 659 785 in 1973). All gas production was from the Roma area, and increased slightly as additional consumers were connected. Gas was moved to Toowoomba, Ipswich and Brisbane through the Roma–Brisbane gas pipeline.

In Queensland at present oil and gas sales are approximately equal to production, as for oil the amounts stored in gathering facilities are small, and for gas there is no underground storage at present.

Drilling activity was again at a low level with 12 wells drilled (12 in 1973). One gas discovery was made in the Roma area, and four appraisal wells drilled in the Kincora field in the same area were also completed as suspended gas wells. Offshore activity remained suspended pending the findings of the Great Barrier Reef Royal Commissions.

Other Minerals

Production of the following minerals as compared with 1973 figures (shown in parenthesis) was:—

Bentonite clay 234 tonnes (66 tonnes); brick and pipe clay 1 084 811 tonnes (1 034 975 tonnes); chrysoprase 9 tonnes (4 tonnes); diatomite 650 tonnes (96 tonnes); dolomite 9 133 tonnes (10 456 tonnes); ironstone 27 148 tonnes (28 127 tonnes); kaolin 2 084 tonnes (1 306 tonnes); limestone and lime 835 753

tonnes (774 888 tonnes); molybdenite 6 tonnes (nil); nickel ore 228 768 tonnes (nil); perlite 2 061 tonnes (2 342 tonnes); rhodenite 3 tonnes (nil); salt 81 749 tonnes (116 198 tonnes); silica 712 439 tonnes (568 099 tonnes); wolfram 179 tonnes (212 tonnes).

State Mining Operations

The Department pursued its policy of active encouragement to the mining industry. Grants were made for the construction and maintenance of roads; assistance was granted to prospectors; loans on hire of equipment were made to various applicants; and subsidies were paid for mine development.

The Treatment Plant, at Irvinebank, operated throughout the year and processed 6 911 tonnes of tin ore. A total of 2 046 samples was received at the Assay Office in Cloncurry and 1 913 assays were performed. Geological survey continued to supply a range of services.

Once again, the Drilling Branch experienced a high turnover of labour. Adverse weather conditions in the early part of 1974 hampered drilling operations. At the end of 1974 there were 150 persons employed at the Drilling Branch. Eighteen drills operated over a wide area of the State and investigated not only coal, metalliferous and non-metalliferous deposits but also carried out stratigraphic and ground water investigations. A seminar for drill foremen was conducted at Clermont, two drill schools were held for drill helpers at Redbank, and on-site training was conducted at the drills.

Inspection of Mines

The number of persons employed in the mineral industry of Queensland was 11 408 which represented a reduction of 101 compared with the previous year. Employment in gazetted quarries and claypits was 420 which represented an increase of 110 over the previous year.

The number of Authorities to Prospect current at the end of 1974 was 231 as compared with 211 for 1973. In the search for new mineral deposits during 1974, there has been greater activity in the North Western part of the State than in other areas.

Coal Mines Inspection Branch

On completion of the year 1974 a total labour force of 4 885 persons was employed. Those employed underground in mines totalled 1 634 with 3 251 employees in surface operations.

Throughout the State a total of 55 mines operated and produced 21 085 029 tonnes of coal valued at the pit head at $210 758 501.

Production increased by 5·6 per cent. above the 1973 figure. The tremendous known resources in Queensland provide a considerable production potential.

Coal exported overseas during 1974 amounted to 15·6 million tonnes—a decrease of 0·48 million tonnes from exports for 1973. The decrease was caused by flooding of open cut mines during State-wide floods in January. Queensland exports exceeded that from the rest of Australia by 1·9 million tonnes.

Coke produced at the Bowen State Coke Works amounted to 27 066 tonnes at a selling price varying from $35 at the commencement of the year to $44 at the year's end. The State Coke Works utilises coal from the Bowen field at Collinsville.

There were four fatal accidents during the year under review. The total number of accidents causing incapacity for more than 14 days amounted to 242—an increase of 48 over the 1973 figure.

Coal exploration during 1974 was directed mainly to the investigation of Permian coals of the Bowen and Galilee Basins of Central Queensland, and of the Triassic and Jurassic coals of Southern Queensland. Much of the drilling in the Bowen Basin was for mining development. In Southern Queensland, where many Authorities to Prospect were granted, prospecting was for coals suitable for conversion to gas and for oil. This was also the main objective for prospecting in the Galilee Basin.

Geological Survey

With almost a full complement of staff, which in recent years has been consolidated around a core of very experienced officers, the Geological Survey pursued a full range of geological investigations. Many of these activities are closely co-ordinated with the work of other State Departments and Authorities. This applies particularly to studies in engineering geology and to resource assessments of economic minerals and extractive materials, as a basis for future urban and industrial development of the State.

To meet the growing demands in this latter area, within the constraints of environmental protection and alternative land use, a specialist section in Urban and Environmental Geology has been established in the Geological Survey.

Activities of most sections of the Survey, however, continue to be severely hampered by overcrowded accommodation and the Core Library at Redbank is now seriously congested.

Coal investigations were directed towards a more detailed assessment of the State's resources, supported by closer drilling to upgrade inferred reserves to measured or indicated status.

Studies in economic geology ranged widely, with greatest emphasis in the mapping and assessment of the limestone resources of the State. A survey of activities on the opal field of south-western Queensland was carried out.

Engineering geological investigations were undertaken for a number of civil engineering projects for governmental and semi-governmental authorities. Groundwater investigations, financed by the Water Resources Investigation Trust Fund, were continued.

Semi-detailed geological mapping at 1:100 000 scale was commenced by the Geological Survey in south-eastern Queensland and the joint programme with the Bureau of Mineral Resources in the north of the State was continued. Compilation of the new geological map of Queensland was virtually complete. Marine geological studies in Moreton Bay were supported by a programme of shallow coring to examine sedimentary characteristics.

The stratigraphic drilling programme in connection with investigations into the petroleum potential of various sedimentary basins was extended by the drilling of two deep bores under contract in the Galilee Basin. This work was supported by sedimentological and palynological studies.

Geophysical investigations, mainly directed to the support of projects of other sections of the Geological Survey, continued to expand with the provision of additional equipment. New areas of activity for the year were marine seismic reflection profiling and examination of the possibility of detecting buried areas of intruded and naturally coked coal.

Coal Miners' Pensions

The *Coal and Oil Shale Mine Workers (Pensions) Act* 1941–1973 provides for the payment of retirement benefits to coal mine workers who retire either by reason of age or incapacity and to the dependants of deceased mineworkers.

The revenue of the Fund is derived from the Government, the Mine Workers and the Mine Owners. The Fund is administered by a Tribunal on which the three contributing bodies are represented.

The Financial Statement for the year ended 30th June, 1974, disclosed that the balance of the Pensions Fund at that date was $7 482 665. At the 30th June, 1974, there were 1 302 pension recipients and pension payments for the year amounted to $724 468.

During the year to 30th June, 1974, 92 applications for lump sum benefit payments amounting to $828 775 were approved.

Office of the Government Gas Engineer and Chief Gas Examiner

In accordance with the provisions of the *Gas Act* 1965–1974, the Government Gas Engineer and Chief Gas Examiner furnishes an annual report up to 30th June each year. The report for the year ended 30th June, 1974, was duly presented to Parliament and printed.

General

Once again our mining industry was one of the mainstays of the State's economy with an annual value of production of more than $690 million. This was $175 million more than last year's figure which also was a record. A rise of this magnitude is even more significant when it is realised that the increase is greater than the State's total value of mineral production just seven years ago.

While there was a decline in the production tonnage of lead, zinc and tin, all metals, including these three increased in market price, which provided the significant rise in value. What is even more important to Queensland and Australia, out of the $690 million produced by the mining industry during the year, more than $550 million was earned on export markets.

While new records were set in 1974 it was disheartening to record that no new major mining venture had come into operation during the period. The growth ratio was the result of mining ventures currently operating which had expanded their operations and gained higher prices for their minerals.

Copper still held the top position as the State's most valuable mineral in terms of value of production, but was closely followed by coal, which has increased its production value ten fold in the past ten years. It is anticipated that coal will be the leading mineral earner for the State next year and several years hence.

In conclusion, I desire to record my appreciation of the loyal support and active co-operation extended to me by the clerical staff, the sub-departments, the engineering and inspectorial staff, Geological Survey staff, and the Mining Wardens and Mining Registrars throughout the State. This has greatly contributed to the general efficiency of the Department and to the continued cordial relations with the industry in its various phases.

Attached hereto are the annual reports of the Wardens of the Mining Districts, the State Mining Engineer, the Chief Inspector of Coal Mines and the Chief Government Geologist which describe in full the activities which have been briefly summarised in this report.

E. K. HEALY, Under Secretary.

TABLE A

GOLD PRODUCTION FOR THE YEARS 1973 AND 1974

1973

Goldfield	Stone Treated (includes Gold Ore Treated at Smelters)	Product of Stone Treated					Old Tailings		Gold from Copper and Other Ores	Alluvial Gold	Total Crude Gold from all Sources	Total Fine Gold from all Sources
		Mill Gold	Cyanide Gold	Gold from Concentrates	Total Yield	Value of Other Minerals						
	Tonnes	Kg	Kg	Kg	Kg	$	Tonnes	Kg	Kg	Kg	Kg	Kg
Bowen	..	..	..	..	..	..	..	..	..	..	..	Nil
Charters Towers ..	69	0·80	..	..	0·80	..	..	..	..	..	..	0·80
Clermont	..	..	..	..	..	..	..	..	..	0·04	..	0·04
Cloncurry	..	..	..	..	..	..	..	..	..	..	..	Nil
Cracow	36 144	323·53	..	..	323·53	43 972	..	..	..	..	..	323·53
Gympie	..	..	..	..	..	..	..	..	..	0·01	..	0·01
Innisfail	10	0·25	..	..	0·25	..	..	..	..	0·16	..	0·41
Mount Isa	..	..	..	..	..	..	..	..	..	..	..	Nil
Mount Morgan ..	1 216 910	..	..	1 538·06	1 538·06	11 769 092	..	..	..	..	..	1 538·06
Mount Peter ..	..	..	..	..	..	..	..	..	..	0·06	..	0·06
Nanango	..	..	..	..	..	..	10	0·06	..	..	..	0·06
Other Sources ..	..	..	..	..	..	..	..	..	..	..	..	Nil
Total	1 253 133	324·58	..	1 538·06	1 862·64	11 813 064	10	0·06	..	0·27	..	*1 862·97

* Approximate value at the Reserve Bank price $1 784 930. In addition a distribution of Gold Premium totalling $548 061·47 was made to members in Queensland of Gold Producers' Association Limited in respect of gold lodged during 1973.

1974

Goldfield	Stone Treated (includes Gold Ore Treated at Smelters)	Product of Stone Treated					Old Tailings		Gold from Copper and Other Ores	Alluvial Gold	Total Crude Gold from all Sources	Total Fine Gold from all Sources
		Mill Gold	Cyanide Gold	Gold from Concentrates	Total Yield	Value of Other Minerals						
	Tonnes	Kg	Kg	Kg	Kg	$	Tonnes	Kg	Kg	Kg	Kg	Kg
Bowen	..	..	..	..	..	..	..	..	..	0·76	..	0·76
Charters Towers ..	..	..	..	..	..	..	..	..	..	0·01	..	0·01
Clermont	..	..	..	..	..	..	..	..	..	..	..	Nil
Cloncurry	..	..	..	..	..	..	..	..	0·26	..	..	0·26
Cracow	34 551	303·28	..	..	303·28	56 854	..	..	..	..	..	303·28
Gympie	..	..	..	..	..	..	..	..	..	..	..	Nil
Innisfail	2	0·14	..	..	0·14	..	..	..	..	..	..	0·14
Mount Isa	..	..	..	..	..	..	..	..	0·08	..	..	0·08
Mount Morgan ..	1 048 502	..	..	1 962·49	1 962·49	14 193 156	..	..	..	..	..	1 962·49
Mount Peter ..	..	..	..	..	..	..	..	..	..	..	..	Nil
Nanango	..	..	..	..	..	..	..	0·02	..	..	..	0·02
Other Sources ..	..	..	..	..	..	..	..	..	..	..	..	Nil
Total	1 083 055	303·42	..	1 962·49	2 265·91	14 250 010	..	0·02	0·34	0·77	..	*2 267·04

* Approximate value at the Reserve Bank price $2 143 183. In addition a distribution of Gold Premium totalling $1 259 918·86 was made to members in Queensland of Gold Producers' Association Limited in respect of gold lodged during 1974.

TABLE B

MINERALS OTHER THAN GOLD, 1973–1974

TABLE SHOWING THE QUANTITY AND VALUE OF MINERALS OTHER THAN GOLD WON DURING 1973–1974

Mining District	1973					1974				
	Nature of Minerals Won	Quantity		Value of Various Minerals	Gross Value of Various Minerals	Nature of Minerals Won	Quantity		Value of Various Minerals	Gross Value of Various Minerals
		Tonnes	Kg	$	$		Tonnes	Kg	$	$
Bowen	Coal	764 866·19	..	6 091 135		Coal	825 721·00	..	7 650 659	
	Lime	972·56	..	7 851	6 098 986	Lime	3 093·72	..	15 866	7 666 525
Brisbane	Rutile	91 302·82	..	11 161 190		Rutile	94 912·00	..	15 300 504	
	Zircon	68 329·08	..	2 355 728		Zircon	85 818·00	..	8 186 152	
	Brick Clay	693 577·00	..	728 719		Ilmenite	39 237·00	..	333 307	
	Silica	95 627·00	..	416 570	14 662 207	Brick and Pipe Clay	621 430·00	..	682 882	
						Silica	158 163·00	..	781 050	25 283 895
Bundaberg	Silica	2 675·00	..	6 450		Silica	1 635·00	..	2 175	
	Brick Clay	40·00	..	50	6 500	Brick Clay	5 012·00	..	9 268	11 443
Cairns	Limestone	15·24	..	310		Nil	..	..	..	..
	Brick and Pipe Clay	6 207·76	..	5 277	5 587					
Charters Towers	Tin Concentrates	8·16	..	..	10 549	Nickel Ore	228 768·00	..	514 728*	
						Tin Concentrates	1·70	..	4 865	519 593
Clermont	Coal	12 658 929·17	..	91 807 071		Coal	13 616 460·00	..	133 072 498	
	Gems	..	..	10 000 000*	101 807 071	Gems	..	..	10 000 000*	143 072 498
Cloncurry	Copper	481·85	..	601 351		Copper	848·00	..	1 129 268	
	Limestone and Lime	16 700·83	..	111 896		Limestone and Lime	16 991·00	..	134 140	
	Silica	6 242·69	..	30 615		Silica	67 415·00	..	463 321	
	‡Silver	..	38·50	1 933	745 795	‡Silver	..	0·78	93	1 726 822
Cooktown	Tin Concentrates	6·96	..	14 727		Tin Concentrates	5·00	..	17 774	
	Silica	398 371·00	..	1 217 000	1,231 727	Silica	453 221·00	..	1 468 812	1 486 586
Cunnamulla	Opal	..	..	..	50 000*	Opal	..	..	..	100 000*
Eidsvold	‡Silver	..	745·12	..	43 972	‡Silver	..	551·46	..	56 854
Gladstone	Limestone and Lime	100 734·86	..	..	234 352	Limestone and Lime	172 237·00	..	568 286	
						Rutile	148·00	..	25 456	
						Zircon	189·00	..	24 948	618 690
Gympie	Limestone and Lime	7 366·34	..	96 530		Limestone and Lime	8 874·80	..	68 360	
	Brick and Pipe Clay	27 952·50	..	21 898		Brick and Pipe Clay	41 276·00	..	28 050	
	Rutile	5 882·61	..	754 486		Rutile	11 370·00	..	2 058 856	
	Zircon	8 184·34	..	312 598		Zircon	14 957·00	..	1 589 423	
	Manganese	16·76	..	1 481		Magnetite	19 020·00	..	760 800	
	Magnetite	22 921·98	..	618 894	1 805 887					4 505 489
Herberton	Tin Concentrates	1 973·40	..	3 722 767		Tin Concentrates	2 014·53	..	..	6 055 863
	Antimony	4·50	..	8 000	3 730 767					
Ingham	Fire Clay	448·80	..	898		Tin Concentrates	44·18	..	..	85 104
	Tin Concentrates	57·88	..	43 646	44 544					
Innisfail	Brick Clay	305·00	..	..	305	Brick Clay	180·00	..	..	180
Ipswich	Coal	2 414 603·06	..	19 400 669		Coal	2 379 966·00	..	25 799 768	
	Dolomite	10 455·66	..	135 693		Dolomite	9 133·00	..	100 463	
	Brick and Pipe Clay	111 025·43	..	282 204	19 818 566	Brick and Pipe Clay	241 987·00	..	459 071	
						Bentonite Clay	127·00	..	7 596	26 366 898
Longreach	Nil	..	..	..	..	Opal	..	..	..	2 000
Mackay	Brick and Pipe Clay	9 232·02	..	..	18 102	Brick and Pipe Clay	6 595·00	..	..	17 147
Mareeba	Tin Concentrates	522·20	..	1 115 697		Tin Concentrates	245·26	..	764 559	
	Wolfram	211·74	..	377 500		Wolfram	178·28	..	564 250	
	Limestone and Lime	4 656·00	..	92 300	1 585 497	Limestone and Lime	2 437·00	..	69 000	
						Molybdenite	6·00	..	5 800	1 403 609
Maryborough	Brick and Pipe Clay	27 061·00	..	20 603		Brick and Pipe Clay	24 461·00	..	30 947	
	Coal	69 260·31	..	644 156		Coal	64 689·00	..	760 883	
	Rutile	13 431·50	..	1 884 389		Rutile	15 060·00	..	3 181 124	
	Zircon	10 723·90	..	445 119		Zircon	10 883·00	..	2 023 367	
	Monazite	44·25	..	4 390	2 998 657	Monazite	27·35	..	3 420	5 999 741
Mossman	Nil	..	..	..	..	Tin Concentrates	2·25	..	7 875	
						Wolfram	0·25	..	875	8 750
Mount Isa	Copper	136 597·00	..	167 630·514		Copper	164 510·00	..	210 760 239	
	§Copper	191·00	..	216 342		§Copper	266·00	..	251 698	
	Silver	..	301 536·00	16 490 808		Silver	..	327 726·00	34 165 436	
	§Silver	..	1 338·00	85 192		§Silver	..	1 262·00	122 578	
	Lead	125 112·00	..	37 765 766		Lead	119 381·00	..	48 867 419	
	§Lead	911·00	..	234 539		§Lead	833·00	..	301 523	
	Zinc	108 109·00	..	40 109 895		Zinc	103 051·00	..	55 677 425	
	Silica	40 854·00	..	346 365		Silica	17 918·00	..	129 834	
	Limestone	84 745·00	..	537 800	263 417 221	Limestone	72 989·00	..	495 271	350 771 423
Mount Morgan	Copper	9 369·54	..	11 682 834		Copper	9 745·00	..	14 033 775	
	‡Silver	..	1 375·73	86 258		‡Silver	..	1 517·91	159 381	
	Coal	4 053 442·07	..	32 279 531		Coal	4 186 424·00	..	43 320 284	
	Slate	34·15	..	2 003	44 050 626					57 513 440
Nanango	Brick Clay	8 437·00	..	6 735		Brick Clay	4 595·00	..	3 658	
	Kaolin	1 305·56	..	20 618		Kaolin	2 084·00	..	37 540	
	Bentonite Clay	66·04	..	1 300		Bentonite Clay	107·00	..	2 140	
	Limestone and Lime	7 469·00	..	85 909	114 562	Limestone and Lime	7 280·00	..	57 104	100 442
Quilpie	Opal	..	..	..	450 000*	Opal	..	..	..	500 000*
Rockhampton	Limestone and Lime	226 772·00	..	800 670		Limestone and Lime	206 726·00	..	723 544	
	Brick Clay	27 492·00	..	52 252		Brick Clay	39 102·00	..	62 563	
	Salt	116 198·00	..	685 568		Salt	81 749·00	..	480 684	
	Chrysoprase	4·06	..	27 955	1 566 445	Chrysoprase	9·03	..	46 942	1 313 733
Roma	Nil	..	..	..	..	Gems	..	..	..	200
Southport	Rutile	1 384·14	..	166 097		Rutile	1 150·56	..	338 400	
	Zircon	1 512·66	..	54 871		Zircon	1 336·20	..	262 000	
	Brick and Pipe Clay	21 298·62	..	28 816		Brick and Pipe Clay	3 972·92	..	7 477	
	Perlite	2 342·00	..	23 420		Perlite	2 060·74	..	22 671	
	Jasper	0·05	..	49	273 253					630 548
Stanthorpe	Tin Concentrates	18·74	..	39 299		Tin Concentrates	43·34	..	147 284	
	Limestone	473·51	..	11 611	50 910	Limestone	704·00	..	20 204	167 488
Thursday Island	Tin Concentrates	0·61	..	..	1 161	Tin Concentrates	0·15	..	..	363
Toowoomba	Coal	13 542·93	..	130 013		Coal	11 769·00	..	154 409	
	Diatomite	96·00	..	960		Diatomite	650·00	..	1 300	
	Brick Clay	23 144·00	..	18 759	149 732	Brick Clay	19 968·00	..	19 852	175 561
Townsville	Limestone and Lime	321 314·00	..	436 314		Limestone and Lime	339 936·00	..	541 435	
	Ironstone	5 205·00	..	15 475		Ironstone	8 128·00	..	24 314	
	Brick and Pipe Clay	75 633·00	..	27 409		Brick and Pipe Clay	72 532·00	..	49 927	
	Silica	24 329·00	..	50 090		Silica	14 087·00	..	30 484	
	Wolfram	0·24	..	300	529 588					646 160
Warwick	Limestone and Lime	3 668·80	..	50 229		Limestone and Lime	4 484·00	..	86 411	
	Brick Clay	3 570·00	..	3 500		Brick Clay	3 700·00	..	3 700	
	Slate	122·40	..	3 600		Rhodonite	2·50	..	1 000	
	Copper	0·20	..	200	57 529					91 111
Weipa	Bauxite	8 980 832·00	..	..	45 069 407†	Bauxite	9 267 906·00	..	..	48 656 507†
Other Sources	Nil	..	..	..	..	Nil	..	..	..	..
	Total	..	..	..	¶$510 629 505	Total	..	..	..	¶$685 554 663

* Estimated.
† Arbitrary value only due to fluctuations in price, inter-companies transactions and other relevant factors.
‡ By-product of other ores.
§ By-product of copper-lead dross from Mount Isa Mines treated overseas.
¶ Crude oil, condensate and natural gas not shown in this Table but included in Synopsis.

SYNOPSIS

Minerals	1973 Total Quantity Won		1973 Value	Minerals	1974 Total Quantity Won		1974 Value
	Kg	Tonnes	$		Kg	Tonnes	$
Antimony	..	4·50	8 000	Bauxite	..	9 267 906·00	48 656 507*
Bauxite	..	8 980 832·00	45 069 407*	Bentonite Clay	..	234·00	9 736
Bentonite Clay	..	66·04	1 300	Chrysoprase	..	9·03	46 942
Building Stone	..	156·55	5 603	Clay (Brick and Pipe)	..	1 084 810·92	1 374 722
Chrysoprase	..	4·06	27 955	Coal	..	21 085 029·00	210 758 501
Clay (Brick and Pipe)	..	1 034 975·33	1 214 629	Copper	..	175 369·00	226 174 980
Coal	..	19 974 643·73	150 352 575	Diatomite	..	650·00	1 300
Copper	..	146 639·59	180 131 241	Dolomite	..	9 133·00	100 463
Diatomite	..	96·00	960	Gems	..	..	10 000 200†
Dolomite	..	10 455·66	135 693	Ironstone	..	27 148·00	785 114
Fire Clay	..	448·80	898	Kaolin	..	2 084·00	37 540
Gems	..	..	10 000 000†	Lead	..	120 214·00	49 168 942
Ironstone	..	28 126·98	634 369	Limestone and Lime	..	835 752·52	2 779 621
Jasper	..	0·05	49	Molybdenite	..	6·00	5 800
Kaolin	..	1 305·56	20 618	Nickel Ore	..	228 768·00	514 728†
Lead	..	126 023·00	38 000 305	Opal	..	..	602 000†
Limestone and Lime	..	774 888·14	2 465 772	Perlite	..	2 060·74	22 671
Manganese	..	16·76	1 481	Petroleum—			
Opal	..	..	500 000†	Crude Oil 487 047 bbls	..	62 342·00	1 048 996
Perlite	..	2 342·00	23 420	Condensate 21 826 bbls	..	2 794·00	34 118
Petroleum—				Natural Gas 289 322 000 m³	..	..	1 756 668
Crude Oil 667 400 bbls	..	85 427·20	1 434 910	Rhodenite	..	2·50	1 000
Condensate 16 927 bbls	..	2 166·66	27 083	Salt	..	81 749·00	480 684
Natural Gas 272 149 000 m³	..	..	1 659 785	Silica	..	712 439·00	2 875 676
Salt	..	116 198·00	685 568	Silver	331 058·15	..	34 504 342
Silica	..	568 098·69	2 067 090	Tin Concentrates	..	2 356·41	7 083 687
Silver	305 033·35	..	16 708 163	Wolfram	..	178·53	565 125
Tin Concentrates	..	2 587·95	4 947 846	Zinc	..	103 051·00	55 677 425
Wolfram	..	211·98	377 800	Zircon–Rutile–Ilmenite–Monazite-Garnet Concentrates Containing—			
Zinc	..	108 109·00	40 109 895	Rutile	..	122 640·56	20 904 340
Zircon–Rutile–Ilmenite–Monazite–Garnet Concentrates Containing—				Zircon	..	113 183·20	12 085 890
Rutile	..	112 001·07	13 966 162	Monazite	..	27·35	3 420
Zircon	..	88 749·98	3 168 316	Ilmenite	..	39 237·00	333 307
Monazite	..	44·25	4 390				
Total	..	..	$513 751 283	Total	..	..	$688 394 445

Total Value Mineral Production Including Gold‡ 1974 .. .. $690 537 628§

Total Value Mineral Production Including Gold‡ 1973 .. .. $515 536 213§

* Arbitrary value only due to fluctuations in price, inter-companies transactions and other relevant factors.

† Estimated.

‡ Gold value calculated at the Reserve Bank price.

§ In addition a distribution of gold premiums was made to members in Queensland of Gold Producers Association Limited in respect of gold lodged during these years. Premiums distributed for gold lodged totalled $548 061.47 for 1973 and $1 259 918.86 for 1974.

Table C

Showing Approximately the Quantity and Value of Minerals Raised since 1860

Year	Agate		Alunite		Amethyst		Antimony Ore		Arsenic		Bauxite		Beryllium Ore	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$		$
To—														
1964	3	2 700	3	76	..	..	5 197	184 700	4 318	248 190	1 786 883	4 696 038	71	11 972
1965	2	2 240	..	..	..	..	..	..	..	..	664 002	3 731 876	..	..
1966	11	5 798	..	..	*	114	..	..	..	..	988 871	5 550 590	..	..
1967	16	1 104	..	..	..	..	2	400	..	..	2 855 020	16 021 350	..	..
1968	29	1 524	..	..	1	207	2	606	..	..	3 309 270	18 564 000	..	..
1969	4	1 785	..	..	*	425	7	2 828	..	..	5 297 210	28 308 315	..	..
1970	2	792	..	..	..	..	11	12 708	..	..	5 771 164	27 587 000	..	..
1971	2	1 738	..	..	..	..	242	149 850	..	..	7 481 176	34 164 000	..	..
1972	5	216	..	..	..	..	..	..	..	..	7 734 409	38 824 295	..	..
1973	..	..	..	..	..	..	5	8 000	..	..	8 980 832	45 069 407	..	..
1974	..	..	..	..	..	..	..	..	..	..	9 267 906	48 656 507	..	..
Totals	74	17 897	3	76	1	746	5 466	359 092	4 318	248 190	54 136 743	271 173 378	71	11 972

Year	Bismuth		Building Stone		Cadmium		Chalcedony		Chromite		Chrysoprase		Clay (Bentonite)	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$		$
To—														
1964	822	295 450	1 014 615	561 634	27	28 930	*	120	11 968	87 382	11	52 358	4 326	94 802
1965	..	..	549	9 148	..	..	..	..	..	..	10	132 000	273	10 106
1966	..	..	93	368	..	..	..	..	..	..	22	221 947	267	9 871
1967	..	..	..	..	..	..	..	..	..	..	8	144 585	228	8 170
1968	..	..	254	4 000	..	..	..	..	..	..	19	117 040	269	8 600
1969	62	103 500	152	1 500	..	..	..	..	..	..	17	82 840	204	6 775
1970	6	53 800	140	1 555	..	..	4	110	..	..	28	135 992	270	8 420
1971	16	115 655	227	5 489	..	..	..	..	..	..	23	112 050	267	8 573
1972	12	14 611	571	7100	..	..	..	..	..	..	40	248 293	230	7 248
1973	..	..	157	5 603	..	..	..	..	..	..	4	27 955	66	1 300
1974	..	..	..	..	..	..	..	..	..	..	9	46 942	234	9 736
Totals	918	583 016	1 016 758	596 397	27	28 930	4	230	11 968	87 382	191	1 322 002	6 634	173 601

* Less than a half tonne. † Revised.

For details of individual years prior to 1952—see Annual Reports for 1959 and previous.

Table C—*continued*

Showing Approximately the Quantity and Value of Minerals Raised since 1860—*continued*

Year	Clay (Brick and Pipe)		Clay (Fire)		Clay (Kaolin, Pottery, Etc.)		Coal		Cobalt		Copper	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$
To—												
1964	3 910 843	3 095 184	215 909	154 334	14 264	52 078	102 077 974	303 864 587	778	315 788	1 142 082	479 977 586
1965	439 479	401 134	669	444	462	3 948	4 310 934	23 711 172	..	..	59 677	43 124 132
1966	488 995	465 741	1 008	3 165	57	999	4 777 161	25 569 321	..	..	72 869	68 835 832
1967	517 353	500 574	334	138	220	2 577	4 859 213	25 641 697	..	..	52 501	54 151 892
1968	619 638	616 865	..	..	602	8 025	6 795 964	39 731 852	..	..	71 654	79 319 052
1969	619 086	608 978	..	..	995	12 288	8 635 280	47 135 601	..	..	90 018	118 212 473
1970	687 439	696 863	..	..	1 146	17 605	10 124 356	54 617 765	..	..	97 999	128 862 410
1971	803 795	832 394	..	..	1 217	19 460	11 628 896	77 886 217	..	..	126 850	123 693 505
1972	904 927	922 431	1 006	2 050	853	14 206	17 611 589	128 606 030	..	..	129 572	121 171 963
1973	1 034 975	1 214 629	449	898	1 306	20 618	19 974 644	150 352 575	..	..	146 640	180 131 241
1974	1 084 811	1 374 722	..	..	2 084	37 540	21 085 029	210 758 501	..	..	175 369	226 174 980
Totals ..	11 111 341	10 729 515	219 375	161 029	23 206	189 344	211 881 040	1 087 875 318	778	315 788	2 165 231	1 623 655 066

Year	Crude Oil and Condensate		Diatomite		Dolomite		Felspar		Fluorspar		Gems	Graphite	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Value	Tonnes	Value
		$		$		$		$		$	$		$
To—													
1964	159 271	2 967 866	14 602	46 806	106 407	422 924	8	84	26 106	266 280	1 461 507	2 104	40 122
1965	335 667	7 175 600	4 701	9 000	3 904	30 736	..	..	..	..	42 336	..	..
1966	433 849	10 641 635	910	10 792	6 417	56 839	..	..	..	..	73 320	..	..
1967	358 443	8 788 418	6 426	13 868	5 579	53 537	..	..	..	..	128 000	..	..
1968	400 955	9 825 742	6 564	15 600	3 927	37 684	..	..	..	..	146 000	..	..
1969	237 952	5 830 568	788	5 612	6 975	79 634	..	..	..	..	1 000 000	..	..
1970	170 235	3 947 935	567	3 941	10 335	114 241	..	..	..	..	1 000 000	..	..
1971	136 657	2 280 911	138	1 360	9 679	132 802	..	..	..	..	2 000 000	..	..
1972	91 458	1 523 135	61	600	9 209	117 864	..	..	..	..	5 000 000	..	..
1973	87 594	1 461 993	96	960	10 456	135 693	..	..	..	..	10 000 000	..	..
1974	65 136	1 083 114	650	1 300	9 133	100 463	..	..	..	..	10 000 200	..	..
Totals ..	2 477 217	55 526 917	35 503	109 839	182 021	1 282 417	8	84	26 106	266 280	30 851 363	2 104	40 122

Year	Ironstone		Jasper		Lead		Limestone and Lime		Magnesite		Manganese	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$
To—												
1964 ..	693 739	1 334 098	1	456	1 402 284	199 578 120	5 575 521	11 655 686	1 379	5 008	52 251	846 466
1965 ..	7 475	14 714	4	2 094	47 698	13 579 888	245 220	1 103 984	660	6 500	2 293	23 960
1966 ..	1 987	9 577	1	1 149	55 508	13 102 800	246 330	1 154 820	63	806	5 629	150 360
1967 ..	11 263	267 889	*	430	85 599	17 416 531	438 504	1 533 479	..	..	..	..
1968 ..	17 554	424 421	1	412	105 558	22 759 103	500 257	1 734 240	..	..	..	..
1969 ..	12 786	282 533	*	355	137 598	35 778 208	553 198	1 953 610	..	..	..	..
1970 ..	22 627	496 939	*	194	151 781	41 372 256	487 918	1 746 627	..	..	..	..
1971 ..	26 314	595 265	1	328	128 054	28 532 586	623 508	2 136 778	..	..	..	..
1972 ..	42 595	1 014 330	..	..	115 133	29 154 080	709 157	2 104 485	..	..	13	1 148
1973 ..	28 127	634 369	*	49	126 023	38 000 305	774 888	2 465 772	..	..	17	1 481
1974 ..	27 148	785 114	..	..	120 214	49 168 942	835 753	2 779 621	..	..	..	..
Totals ..	891 615	5 859 249	8	5 467	2 475 450	488 442 819	10 990 254	30 369 102	2 102	12 314	60 203	1 023 415

Year	Marble		Mercury		Mica		Mineral Sands Concentrates		Molybdenite, &c.		Natural Gas		Opal
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Cu. Metres	Value	Value
		$		$		$		$		$		$	$
To—													
1964 ..	10 957	149 370	9	23 896	11	1 932	564 958	34 595 156	3 552	1 304 264	7 667 207	153 092	412 894
1965 ..	..	..	..	..	..	..	35 867	1 929 600	4	9 000	3 801 455	72 630	..
1966 ..	17	510	..	..	..	..	62 884	3 460 829	..	..	4 048 694	80 408	3 783
1967 ..	104	526	..	..	..	..	105 617	6 036 008	..	..	3 590 182	71 990	7 721
1968 ..	756	3 710	..	..	..	..	131 544	7 760 365	..	..	3 479 651	72 227	5 537
1969 ..	586	882	..	..	..	..	201 037	11 061 569	90	150 000	105 271 761	446 114†	12 605
1970 ..	198	97	..	..	..	..	261 797	12 231 056	115	174 629	215 383 803	912 740†	16 092
1971 ..	22	11	..	..	..	..	214 812	13 358 823	22	27 638	230 317 990	1 051 231†	57 986
1972 ..	..	..	..	..	..	..	182 799	15 162 847	8	9 691	250 905 184	1 401 749	127 856
1973 ..	..	..	..	..	..	..	200 795	17 138 868	..	..	272 149 000	1 659 785	500 000
1974 ..	..	..	..	..	..	..	275 088	33 326 957	6	5 800	289 322 000	1 756 668	602 000
Totals ..	12 640	155 106	9	23 896	11	1 932	2 237 198	156 062 078	3 797	1 681 022	1 385 936 927	7 678 634	1 746 474

Year	Nickel Ore		Perlite		Phosphate Rock		Pyrites		Quartz		Quartz Crystal		Rhodenite	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$		$
To—														
1964	..	..	3 536	9 380	441	3 698	458 362	2 837 912	992	552	1	248	1	644
1965	..	..	776	1 378	..	..	4 201	13 068	..	..	..	..	*	70
1966	..	..	1 567	3 038	..	..	7 940	11 336	..	..	..	..	..	..
1967	..	..	1 411	2 778	..	..	11 928	17 610	..	..	..	..	..	..
1968	..	..	1 012	1 992	..	..	1 524	2 250	..	..	..	..	..	..
1969	..	..	1 132	2 228	..	..	7 392	3 085	..	..	..	..	..	..
1970	..	..	838	1 650	..	..	40 556	380 295	..	..	..	..	..	..
1971	..	..	2 122	25 000	..	..	165	6 183	..	..	..	..	..	..
1972	..	..	1 807	18 020	..	..	..	..	..	..	..	..	..	..
1973	..	..	2 342	23 420	..	..	..	..	..	..	..	..	..	..
1974	228 768	514 728	2 061	22 671	..	..	..	..	..	..	..	..	3	1 000
Totals	228 768	514 728	18 604	111 555	441	3 698	532 068	3 271 739	992	552	1	248	4	1 714

* Less than a half tonne. † Revised.

For details of individual years prior to 1952—see Annual Reports for 1959 and previous.

Table C—*continued*

Showing Approximately the Quantity and Value of Minerals Raised since 1860—*continued*

Year	Salt		Scheelite		Scheelite–Wolfram		Silica		Silver		Tantalite	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Kg.	Value	Tonnes	Value
		$		$		$		$		$		$
To—												
1964	124 517	492 060	116	95 306	2	700	153 660	534 426	3 897 307	70 911 198	*	120
1965	27 295	92 700	..	..	..	..	46 153	135 316	140 612	5 275 090	..	..
1966	29 058	54 253	..	..	..	..	39 426	114 348	165 444	6 212 573	..	..
1967	37 711	140 734	..	..	..	..	70 206	252 907	225 861	10 622 371	..	..
1968	56 553	151 746	..	..	..	..	164 482	621 591	273 537	17 404 595	..	..
1969	245 289	755 500	18	39 698	..	..	208 858	795 271	341 814	17 726 078	..	..
1970	352 300	1 170 517	12	28 099	..	..	294 985	1 260 061	385 867	19 610 014	..	..
1971	246 158	892 861	..	..	..	..	405 701	2 215 029	315 584	13 708 077	..	..
1972	132 941	491 988	..	..	..	..	395 419	1 769 001	271 869	12 327 593	..	..
1973	116 198	685 568	..	..	..	..	568 099	2 067 090	305 033	16 708 163	..	..
1974	81 749	480 684	..	..	..	..	712 439	2 875 676	331 058	34 504 342	..	..
Totals	1 449 769	5 408 611	146	163 103	2	700	3 059 428	12 640 716	6 653 986	225 010 094	*	120

Year	Tin Concentrates		Tin (From Slag)		Tin–Lead (From Slag)		Uranium		Whiting		Wolfram		Zinc	
	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value	Tonnes	Value
		$		$		$		$		$		$		$
To—														
1964	195 285	53 248 884	42	12 906	15	14 694	4 098	79 592 088	10	160	13 453	5 317 364	618 224	96 780 996
1965	1 695	3 815 490	..	..	..	..	..	..	..	..	*	800	23 038	6 235 350
1966	2 275	4 667 860	..	..	..	..	..	..	..	..	*	1 200	33 911	8 660 465
1967	2 349	4 213 437	..	..	..	..	..	..	..	..	3	7 003	40 714	10 022 909
1968	1 606	2 763 335	..	..	..	..	..	..	..	..	2	6 359	67 666	16 282 966
1969	1 626	2 964 447	..	..	..	..	..	..	..	..	255	869 897	84 799	21 729 581
1970	1 698	3 617 048	..	..	..	..	..	..	..	..	206	855 154	96 124	26 355 056
1971	1 667	3 298 252	..	..	..	..	..	..	..	..	93	282 085	90 471	27 105 054
1972	1 816	3 404 029	..	..	..	..	..	..	..	..	83	168 784	96 258	31 476 366
1973	2 588	4 947 846	..	..	..	..	..	..	..	..	212	377 800	108 109	40 109 895
1974	2 356	7 083 687	..	..	..	..	..	..	..	..	179	565 125	103 051	55 677 425
Totals	214 961	94 024 315	42	12 906	15	14 694	4 098	79 592 088	10	160	14 486	8 451 571	1 362 365	340 436 063

* Less than a half tonne. † Revised.

For details of individual years prior to 1952—see Annual Reports for 1959 and previous.

SYNOPSIS OF VALUE OF MINERALS RAISED EACH YEAR, SINCE 1860

Year	Value	Year	Value	Year	Value	Year	Value
	$		$		$		$
1860	18 588	1890	918 662	1920	5 945 026	1950	30 171 872
1861	22 744	1891	640 290	1921	2 569 864	1951	*38 290 072
1862	59 170	1892	733 164	1922	2 965 960	1952	43 975 820
1863	90 000	1893	749 158	1923	3 647 798	1953	41 303 776
1864	151 000	1894	545 118	1924	3 693 220	1954	50 781 396
1865	155 730	1895	570 178	1925	3 631 118	1955	60 564 712
1866	226 242	1896	575 298	1926	3 129 654	1956	72 036 760
1867	187 532	1897	462 726	1927	2 969 340	1957	62 078 138
1868	169 078	1898	424 724	1928	2 661 042	1958	69 178 264
1869	164 274	1899	603 002	1929	3 333 858	1959	91 517 972
1870	186 264	1900	616 710	1930	2 460 024	1960	105 654 324
1871	368 044	1901	1 145 620	1931	2 418 766	1961	90 672 522
1872	643 872	1902	1 179 922	1932	3 371 368	1962	104 269 330
1873	1 628 422	1903	1 692 566	1933	3 426 296	1963	109 422 578
1874	1 088 982	1904	1 978 614	1934	3 582 592	1964	106 695 652
1875	750 108	1905	2 417 960	1935	4 100 386	1965	110 695 504
1876	721 774	1906	3 770 366	1936	5 250 746	1966	149 136 447
1877	654 068	1907	4 306 450	1937	6 675 468	1967	156 070 633
1878	290 338	1908	3 737 866	1938	5 328 930	1968	218 391 646
1879	356 532	1909	3 442 772	1939	6 333 064	1969	*295 964 783
1880	380 292	1910	3 670 534	1940	7 573 630	1970	*327 289 661
1881	519 056	1911	4 041 480	1941	8 346 276	1971	*334 697 191
1882	665 468	1912	5 394 752	1942	8 111 150	1972	395 092 009
1883	667 632	1913	5 458 226	1943	7 165 476	1973	513 751 283
1884	525 652	1914	3 833 212	1944	7 952 194	1974	688 394 445
1885	644 638	1915	4 528 316	1945	7 455 132		
1886	655 534	1916	6 214 112	1946	8 263 314	Total	4 548 326 874
1887	892 898	1917	6 502 676	1947	15 658 302		
1888	912 428	1918	6 347 108	1948	17 068 478		
1889	835 038	1919	3 915 848	1949	22 092 784		

* Revised

Table D

Yield of Gold in the Several Australian States for the Years 1973 and 1974 (Figures for Other States Kindly Furnished by the Commonwealth Bureau of Census and Statistics, Canberra)

State or Dominion	Gold	
	1973	1974
	Kg	Kg
Western Australia	8 587·61	6 583·43
Queensland	1 862·97	2 267·04
Victoria	119·8	111·35
New South Wales	272·07	286·72
Tasmania	1 550·32	1 599·81
Northern Territory	5 120·86	5 313·60
South Australia	..	..
Total Australia	17 513·64	16 161·95
New Zealand	343·50	146·50

Table N

Showing amount of Royalty collected on Coal, Other Minerals and Petroleum since 1956.

Year	Coal	Other Minerals	Petroleum
	$	$	$
1956	34 720	149 542	..
1957	52 992	306 826	..
1958	51 018	164 474	..
1959	49 410	452 912	..
1960	48 540	678 698	..
1961	54 086	628 166	..
1962	57 934	333 212	904
1963	69 270	659 620	3 332
1964	99 260	775 536	135 612
1965	96 758	445 936	444 330
1966	139 130	1 293 876	939 053
1967	144 745	740 689	696 587
1968	219 794	671 179	819 747
1969	313 407	2 299 232	355 421
1970	399 265	4 579 407	265 926
1971	484 430	2 816 647	170 157
1972	733 718	2 076 106	265 890
1973	866 056	4 229 003	262 993
1974	750 741	8 038 429	277 547
Totals	4 665 274	31 339 490	4 637 499

Table M

Estimated Yield of Gold in Queensland to the end of 1974

Year	Estimated Yield	Total of Each Field
	Kg	Kg
Croydon Goldfield		
To end of 1948	24 023·52	
During 1952	0·19	
,, 1957	0·44	
,, 1958	0·12	
		24 024·27
Cloncurry, Calliope, Clermont, Paradise, Normanby, and other small Goldfields		
To end of 1964	33 184·15	
During 1965	20·16	
,, 1966	10·20	
,, 1967	6·75	
,, 1968	8·80	
,, 1969	24·79	
,, 1970	24·45	
,, 1971	2·95	
,, 1972	0·99	
,, 1973	0·57	
,, 1974	1·26	
		33 285·07
Hamilton Goldfield		
To end of 1950	1 475·36	
During 1951	1·24	
,, 1955	0·06	
,, 1956	0·06	
		1 476·72
Chillagoe Field		
To end of 1948	1 746·55	
During 1955	2·02	
		1 748·57
Mareeba Field*		
To end of 1954	5·19	
During 1955	0·40	
,, 1957	0·03	
,, 1958	0·09	
,, 1962	1·21	
,, 1963	1·62	
		8·54
Gympie Goldfield		
To end of 1956	106 635·05	
During 1961	0·09	
,, 1963	3·73	
,, 1965	0·06	
,, 1967	0·03	
,, 1970	0·09	
,, 1972	0·17	
,, 1973	0·01	
		106 639·23
Hodgkinson Goldfield†		
To end of 1908†	†7 144·66	
		7 144·66
Palmer Goldfield		
To end of 1951	41 491·20	
During 1952	0·12	
,, 1954	0·16	
,, 1955	0·31	
,, 1956	0·47	
,, 1957	0·87	
,, 1961	0·06	
,, 1971	0·16	
,, 1972	0·09	
		41 493·44
Charters Towers and Cape River Goldfields		
To end of 1964	211 675·05	
During 1965	3·36	
,, 1966	3·23	
,, 1967	2·77	
,, 1968	2·67	
,, 1969	1·93	
,, 1970	1·52	
,, 1971	2·89	
,, 1972	2·48	
,, 1973	0·80	
,, 1974	0·01	
		211 696·71
Rockhampton and Mount Morgan Goldfields**		
To end of 1964	213 038·26	
During 1965	1 935·97	
,, 1966	3 557·55	
,, 1967	2 601·68	
,, 1968	1 958·77	
,, 1969	1 791·56	
,, 1970	1 877·90	
,, 1971	1 452·69	
,, 1972	1 504·70	
,, 1973	1 538·06	
,, 1974	1 962·49	
		233 219·63
Mount Coolon Goldfield		
To end of 1942	5 565·78	
		5 565·78
Eidsvold Goldfield		
To end of 1950	3 145·00	
		3 145·00
Cracow Goldfield		
To end of 1964	14 859·94	
During 1965	422·51	
,, 1966	383·35	
,, 1967	440·83	
,, 1968	452·71	
,, 1969	448·01	
,, 1970	487·76	
,, 1971	453·18	
,, 1972	404·10	
,, 1973	323·53	
,, 1974	303·28	
		18 979·20

Year	Estimated Yield	Total of Each Field
	Kg	Kg
Etheridge, Oaks, and Woolgar Goldfields		
To end of 1956	20 849·56	
During 1957	0·87	
,, 1958	1·46	
,, 1959	3·92	
,, 1960	0·78	
,, 1961	0·62	
,, 1962	0·88	
,, 1963	0·96	
,, 1964	0·38	
,, 1965	..	
,, 1966	0·03	
		20 859·46
Coen Goldfield		
To end of 1950	1 739·74	
During 1951	0·50	
,, 1955	0·25	
,, 1956	0·37	
		1 740·86
Ravenswood Goldfield		
To end of 1957	28 019·54	
During 1958	0·34	
,, 1959	0·16	
,, 1960	0·16	
,, 1961	0·74	
,, 1962	1·83	
,, 1963	0·19	
,, 1964	..	
,, 1965	1·06	
,, 1966	0·37	
,, 1972	0·35	
		28 024·74

Synopsis

	Kg
Total yield to end of 1899	349 885·59
For the year 1900	21 026·79
Ditto 1901	18 611·76
Ditto 1902	19 920·63
Ditto 1903	20 794·11
Ditto 1904	19 879·82
Ditto 1905	18 432·54
Ditto 1906	16 940·07
Ditto 1907	14 490·55
Ditto 1908	14 465·76
Ditto 1909	14 170·03
Ditto 1910	13 729·08
Ditto 1911	12 011·04
Ditto 1912	10 822·33
Ditto 1913	8 265·28
Ditto 1914	7 759·32
Ditto 1915	7 766·88
Ditto 1916	6 692·29
Ditto 1917	5 577·01
Ditto 1918	4 154·52
Ditto 1919	3 764·45
Ditto 1920	3 584·05
Ditto 1921	1 255·83
Ditto 1922	2 506·44
Ditto 1923	2 759·69
Ditto 1924	3 074·30
Ditto 1925	1 443·39
Ditto 1926	321·58
Ditto 1927	1 181·28
Ditto 1928	412·96
Ditto 1929	294·74
Ditto 1930	243·26
Ditto 1931	408·92
Ditto 1932	723·56
Ditto 1933	2 861·43
Ditto 1934	3 591·55
Ditto 1935	3 203·35
Ditto 1936	3 768·93
Ditto 1937	3 958·88
Ditto 1938	4 710·06
Ditto 1939	4 579·93
Ditto 1940	3 944·89
Ditto 1941	3 392·27
Ditto 1942	2 958·47
Ditto 1943	1 954·48
Ditto 1944	1 593·21
Ditto 1945	1 966·46
Ditto 1946	1 951·21
Ditto 1947	2 248·19
Ditto 1948	2 166·23
Ditto 1949	2 372·64
Ditto 1950	2 744·85
Ditto 1951	2 444·11
Ditto 1952	2 632·66
Ditto 1953	2 233·79
Ditto 1954	3 071·59
Ditto 1955	2 030·93
Ditto 1956	2 186·39
Ditto 1957	2 016·56
Ditto 1958	2 224·24
Ditto 1959	2 845·84
Ditto 1960	2 359·88
Ditto 1961	1 827·64
Ditto 1962	2 106·61
Ditto 1963	2 107·63
Ditto 1964	3 170·44
Ditto 1965	2 414·10
Ditto 1966	3 954·75
Ditto 1967	3 052·06
Ditto 1968	2 422·96
Ditto 1969	2 266·32
Ditto 1970	2 391·73
Ditto 1971	1 911·88
Ditto 1972	1 912·88
Ditto 1973	1 862·97
Ditto 1974	2 267·04
Total	739 051·88

* Previously included in Chillagoe Field. Mareeba constituted a new field from 1-1-49.

† Included in Chillagoe from 1909 and in Mareeba from 1949.

** Prior to 1883 the gold won from Rockhampton District was included in returns under the heading of " Cloncurry, Calliope, and other small Fields."

For details of individual years prior to 1952—see Annual Reports for 1959 and previous.

WARDENS' REPORTS ON MINING DISTRICTS FOR 1974

BLACKALL DISTRICT

There has been a marked decrease in mining activity in this district during the year 1974. Applications for mining leases have been withdrawn or not proceeded with. There are presently four mining leases in force.

Inquiries by tourists to the opal fields have been noticeably absent.

R. W. FITZSIMON, Acting Warden.

BOWEN DISTRICT

COAL

The total production for the district for the year was 825 721 tonnes. The Dacon mines at Collinsville produced 452 181 tonnes and the Bowen Consolidated mine at Scottville produced 373 540 tonnes.

DACON COLLIERIES PTY. LTD.

Summary of Operations—1974

No. 3 Mine.—Production came almost entirely from the extraction of pillars. A new Joy 10CM5 continuous miner arrived in May, 1974. Two new 10SC6 shuttle cars were also puchased to make up a complete production unit. This unit together with the 8CM unit has provided the production. The 6CM and pickup loader is being used as a standby unit to cover maintenance and breakdowns.

No. 5 Mine.—Production continued to come from the main development headings using the Joy 10CM continuous miner. The headings are now 1 277 metres from the surface and are about to change direction to conform with the lease boundary. Coal quality is improving with depth and all the output is consumed by the Collinsville Power Station.

Open-cut.—Mining has begun on the Garrick seam and when expansion warrants it, an underground mine will be programmed to enter fom the high wall. The mining of the other five seams continues with the recovery of the Bowen Seam pillars left in the old State Mine as the final goal. Pillar recovery in open-cut mining compares unfavourably with virgin areas where full recovery of the seam is available, but conservation of coal reserves dictates extraction of these pillars left in the old underground workings.

Export

Exports are well behind the budget of one ship per month. The reasons being unavailability of ships, shortage of coal and industrial troubles.

General

Higher wage rates have been granted by the Coal Industry Tribunal and a new bonus scheme has been negotiated.

Collinsville Power Station

The Power Station was again the major customer and sales are expected to increase as the station expands.

BOWEN CONSOLIDATED COAL MINES LIMITED

A total of 373 540 tonnes of coal was produced during 1974. The production from the underground mine totalled 339 839 tonnes with 33 701 tonnes being produced from the open-cut mine. At the end of the year there were 150 men employed.

Gold

M.Ls. 141, 161 *and* 175 (L. F. White).—Sampling and investigation has been carried out but there has been no production and no reports of results of the sampling.

M.L. 410 (L. F. White)—Two hectares have been cleared with a dozer. Three shafts were sunk to 6 metres showing wash carrying gold. A cut has been put in about 46 metres long and 3 metres deep down to the wash which is about 1 metre thick. A drive has been commenced into the hill following the wash which appears to be the same as the wash under Rutheford's Table. Although 6 kilometres away it is thought to be a continuation of the same alluvial material.

M.Ls. 408, 409 *and* 413 (Ukalunda Development Pty. Ltd.).—The main tunnel was continued for another 39 metres bringing the total distance to approximately 427 metres. From this drive 136 tonnes of wash were treated. No. 2 shaft was sunk for another 3 metres to 56 metres then a tunnel was driven 16 metres south and 13 metres west along a defined gutter and 114 tonnes of wash were raised. On *M.L.* 409 the drive was extended under the hill by 3 metres to an overall length of 40 metres in a northerly direction. Eighteen tonnes of wash were treated. On *M.L.* 413 a shaft was sunk about 12 metres and 10 tonnes of wash were treated. Two men were employed during the year.

Bank returns indicate a production of a total of 24·34 fine ozs or 0·75 686 kg.

Earth Lime

M.Ls. 374 *and* 375 (Inkerman Lime Company).—Production was 2 974 tonnes valued at $15,511. Five persons were employed. No capital works or development was undertaken.

M.L. 456 (J. Morato and N. MacDonald).—The lease was acquired in August, 1974 and 119·72 tonnes were subsequently produced valued at $355. New plant has had to be installed. Two men have been employed, mainly installing plant. A total of $16,000 has been spent on new plant which includes a loader.

D. M. FARDON, Warden.

BUNDABERG DISTRICT

There has been very little activity over the majority of the 63 leases (43 the previous year) currently held in this district during the year 1974. The main production on these leases has been of silica sand, copper and clay. During the year there were 25 new applications received for mining leases mainly for purposes of mining for mineral sands, but also for the recovery of clay and limestone. Mineral Deposits Limited have taken out 9 mining lease applications covering a coastal area from just south of Wreck Point to Round Hill Head in the north. So far only preliminary work, with a view to leases being granted over the areas applied for, has been carried out by this Company.

Silica Sand

During the year operations were conducted by T. J. Madden who employed two men intermittently throughout the year and obtained 135 tonnes of silica sand valued at $675. Tall Ingots Pty. Ltd. and associate companies also mined for silica sand and employed four men and obtained 1 500 tonnes valued at $1,500. The Bundaberg Foundry Company Limited obtained 724·326 cu metres of white moulding sand valued at $3,800. All of the silica sand is obtained in the Coonar Beach area.

Copper

Production of copper precipitate was continued by Mr. R. Spreadborough on his two leases at Mount Perry. The copper recovered was approximately 0·5 tonnes which was of a very poor quality. All the copper recovered is being held on the leases. One man was engaged in the production. During the year Mr. Spreadborough was granted an exemption from labour conditions on his leases for a period of six months. During this period repairs were effected to equipment on the leases which was damaged due to the heavy flood conditions during the latter peiod of 1973 and early 1974.

Gold

There has been no report of gold having being won in the district during the relevant period.

Clay

The Burnett Brickworks Pty. Ltd. obtained 4 512 tonnes at an approximate value of $6,768. One man was employed part time as the clay was required. W. G., T., and B. W. Bowden also obtained 500 tonnes at an approximate value of $2,500 with one person being employed. This clay was also delivered to the Burnett Brickworks Pty. Ltd.

Miner's Rights issued for the year numbered 103 being 4 more than the previous year. A great number more permits to enter private land have been issued for this year. The previous year 101 were issued with 607 being issued this year. The majority of these permits were issued to Dampier Mining Company Ltd., for exploration for rutile, zircon, ilmenite, leucoxene, magnetite, garnet and monazite in the Mount Perry area. Authorities to prospect in the area are held at present by Otter Exploration, Dampier Mining Co. Ltd., Broken Hill Proprietary Co. Ltd., and Mineral Deposits Limited.

R. TULLEY, Warden.

CAIRNS, WEIPA AND MOSSMAN DISTRICTS

CAIRNS

Very little mining work was carried out in the Cairns District during the year 1974. The only reported mining work is as follows:—

M.L. 57 (P. D. Stratford).—No work has been carried out on this lease during the year due to the fact that the leaseholder has been unable to obtain a market for powder silica.

M.Ls. 65, 66, 67, 68 and 69 (Kraft, Bacalakis and Vandeleur).—These leases were held under an option agreement to Leighton Mining during 1974 and they have sought a further option.

M.L. 87 (Land, Marcum and Mackin).—A heavy road has been constructed to the mine and two creeks have had concrete pipes installed. The first three months of the year were entailed in the removal of millable timber on the lease by the Forestry Department and another cut of all timber of usable type was made. Work carried out during the year consisted of experimental cutting, firstly using a motorized stone cutting circular saw then a heavy duty tungsten carbide chain saw and the last method used in 1974 was a locally designed and produced 4·6 metres long reciprocal diamond saw. Although the latter was promising in design, the rate of cut has been found uneconomical. A retail shop has been set up at Tolga for the production of marble artifacts.

M.L. 93 (A. K., R. K. and I. J. Barnes).—This lease was granted on the 28th November, 1974, and a road has been pushed to the mine site where it is intended to start driving on the lode. There is no machinery located on this lease.

WEIPA

M.L. No. 1 (Titanium and Zirconium Industries Pty. Ltd.).—No work was carried out on the lease during the year 1974. No persons were employed and no machinery or equipment of any kind were located on the lease.

S.B.M.L. 1 (Comalco Pty. Ltd.).—A total of 962 staff and 320 contractors were employed during 1974 and 12 357 208 tonnes of bauxite were raised and treated for a return of 9 267 906 tonnes. Other development work consisted of 14 182 metres of exploratory drilling. Additional major plant commissioned included No. 4 benefication plant, No. 2 calcination plant and No. 3 andoom feeder. The approximate value of bauxite produced based on a nominal value of $5.25 per tonne was $48 656 507.

S.B.M.L. 5 (Comalco Pty. Ltd.).—Exploration drilling of this lease has been terminated pending an assessment of the economic value of this deposit.

S.B.M.L. No. 8 (Alcan Qld. Pty. Ltd.).—Further exploration activities were carried on in 1974. The amount and value of production was nil and the average number of men employed during the year was 3 to 4.

MOSSMAN

M.L. 23—*The Annette* (R. D. Mayo).—Two men were employed and one tonne of tin concentrates was won but not sold. A dam was constructed during the year.

M.L. 35 (G. P. Ford and R. Schiller).—This lease yielded 1·25 tonnes of tin during the year. One man was employed.

M.L. 38—*Lady Bett* (J. W. Crothers).—The holder advised that 0·25 tonne of wolfram was won. One man was employed and some roadwork was carried out during the year.

M.L. 41—*Black Idol Extended* (L. H. Gadd and G. D. Chapman).—Approximately 12 metres of tunnelling and some dozing work was performed. One man was employed.

M.L. 43—*White Gem* (A. T. McDowall).—The holder advised that due to lack of finance for plant and machinery, work was restricted to maintenance and clearing.

M.L. 80—*Lucky* (G. P. Ford and R. Schiller).—Work was limited to prospecting and developmental work.

No banks in the district reported any purchases of gold during the year ended 31st December, 1974.

B. J. SCANLAN, Warden.

CHARLEVILLE AND QUILPIE DISTRICTS

Opal mining was again the main interest in mining in these districts during 1974. No production was recorded in the Charleville District. However, in the Quilpie District the value of production was estimated at $500 000, no exact figures being available. The main producer in the area was Mr. D. Burton of Quilpie.

The number of mineral leases and applications in force in these districts totalled 55, covering an area of 2 404 hectares, and there were 152 miners rights issued.

D. A. FISK, Warden.

CHARTERS TOWERS DISTRICT

Mining activity in the Charters Towers District during 1974 was confined in the main to exploratory work, as has been the case over the past three to four years. Apart from Greenvale, the only actual production has been a small amount of tin from the Gowrie Creek area about 112 kilometres from Charters Towers, northerly along the Lynd Highway. No actual mine reports have been received from Daintree Tin N.L., the company operating in this Gowrie Creek area. Companies such as A.O.G. Minerals Pty. Ltd., have done some exploratory work, but such work has been carried out under authorities to prospect. Leighton Mining N.L., under instructions from Nickel Mines Limited has carried out a study of the cyanide dumps in and around Charters Towers. However, the results of the study are not yet to hand.

MINE REPORTS

Mogul (B. Mackay).—One man was employed for part of the year. Prospecting was carried out and overburden stripped by hydraulic s'uicing. A total of 515 loam samples was tested. The hydraulic sluicing plant installed consisted of a 1½" pump, sluice race, ground race and a small concrete dam wall. Work was mainly confined to trailing gold through dense pug clay.

Antler and Antelope (E. J. and M. H. Sorohan).—These two mines are situated adjacent to one another and are to be worked in conjunction. Two men were employed for part of the year. Machinery used consisted of a compressor plant and a bulldozer (both hired). An open-cut was commenced and 30·60 tonnes of ore stock piled for sampling. Part time work only was carried out because of a lack of finance.

Liontown (Nickel Mines Limited).—Six men were employed. Machinery used included a 600 CFM compressor, a 5-yard tip truck, a F100 Ford utility and a F30 diamond drill. The shaft was continued from 32·90 metres to 36·60 metres and two diamond drill holes were sunk to depths of 203·37 and 227·90 metres.

Rio Tinto (W. J. Harvey-Hall and Others).—Two men were employed for part of the year. Machinery used included an end loader, an 8-ton tip truck, a portable compressor, a jack hammer and a utility. Three open-cuts were commenced to a depth of 3 metres. A total of 130 tonnes of ore was treated. Considerable time and expense was spent in constructing and repairing roads and creek crossings.

Warrawee (Cormepar Minerals Pty. Ltd.).—Detailed geological mapping was carried out over several parts of the lease areas. A programme of mercury soil sampling was also carried out. Plans and sections were prepared compiling available surface and down hole information. A further 367 metres of diamond drilling had been carried out to the end of the year. Results are currently being assessed. All the work has been carried out by Geopeko Ltd., under terms of a joint venture agreement.

Kay Bee Leases (Kay Bee Development Pty. Ltd.).—During 1974 activities were supported by two companies namely A.O. (Aust.) Pty. Ltd., and Mines Administration Pty. Ltd. Kay Bee Development Pty. Ltd. concentrated on bulk sampling and panning of bismuth samples, mapping generations of veins and picking shoots as well as petrologic studies and studies of breccias. Maintenance work was undertaken on a shed and water supply on the leases, and also facilities nearby at Dalrymple. The associated companies undertook soil geochemical sampling at 50 metre intervals over all leases. Contoured copper and zinc anomaly maps were prepared. These were compared with earlier rock-chip geochemistry undertaken by this company and checked in an independent programme. Work done on *M.L.* 214 *Kay Bee One* consisted of a costeen 100 metres long and 1 metre deep which was cut across the southern limits of a stockwork of veinlets. A 152·40 metres diamond drill hole was directed westwards on a 50 degree decline under the length of this costeen. Work carried out on *M.L.* 774 *Kay Bee North East* consisted of several hundreds of metres of costeening which has confirmed the existence of a mass of mineralised breccia. A 274·32 metres diamond drill hole directed eastwards on a 50 degree decline from the western margin of the breccia tested the breccia pipe.

Midas (J. W. Parsons).—Surface work was carried out and sets were cut for replacement after the wet season. Water was pumped out of the shaft and used for sluicing and a windlass and stand were made. Costeen work was done and 4·59 tonnes were stripped off the surface and the yield from the sluice plant was 0·006 kg of gold.

Woop (J. W. Parsons).—A total of 3·57 tonnes of ore, by sluicing, yielded 0·004 kg of gold. The crossing on Lolworth Creek was repaired and a prospecting hole was sunk 30 metres from the centre of the lease.

Greenvale (Queensland Nickel Pty. Ltd.).—The construction of all mine buildings, maintenance and materials handling facilities comprising workshops, crushing plant, transferring, stacking and reclaiming equipment and the train loading out station had been completed and commissioned.

Erection of housing at the Town site was also completed during the year, as well as recreational facilities, a shopping centre and a hotel/motel.

By the middle of the year, the full schedule of mining equipment including draglines, scrapers, front-end loaders, bulldozers and haul trucks had been delivered to the mine site. Removal of overburden and shipping and drilling operations were carried on throughout the year, except for several weeks in January and February when exceptionally heavy rainfall in that period halted all earthmoving operations. A total of 1 443 000 cubic metres of overburden was removed up to the end of December. Blast hole drilling was commenced in April and excavation of ore from trenches by dragline was started in June. In the last six months of the year, 432 000 wet tonnes of ore were excavated to windrows by dragline and 116 000 wet tonnes of soft ore were extracted by scrapers from the surface of the limonite ore body. Pending completion of the crusher and ore handling facilities, soft ore extracted by scrapers was screened through a temporary grizzly during July and August and trucked to a temporary stockpile adjacent to the railway loop. Ore was loaded by front-end loaders from this stockpile into the ore trains which commenced to run on 7th August. The crushing plant commenced to operate on 3rd September, and the train loading out station commenced to function in late November. At the year's end, a total of 223 000 wet tonnes of ore had been crushed and 229 000 wet tonnes of ore had been railed to the treatment plant at Yabulu. At the end of December, 191 men were employed at Greenvale in mine operations and train loading.

COMPARATIVE STATEMENT OF PRODUCTION

GOLD

Nature of Material	1973		1974	
	Treated	Yield	Treated	Yield
	Tonnes	Kg	Tonnes	Kg
Milled	69·36	0·802	..	..
New tailings ..	..	..	..	..
Old tailings ..	..	..	..	..
Alluvial	..	..	8·16	0·010

OTHER MINERALS

Mineral	1973	1974
	Tonnes	Tonnes
Lode Tin	..	..
Alluvial Tin	8·16	1·70
Wolfram	..	..
Clay Materials	..	..
Nickle Ore	..	22 876·8

E. W. LENDICH, Warden.

CLERMONT DISTRICT

CLERMONT

Gold

There was a noticeable increase in gold mining activities within the Clermont district in particular, during 1974, mainly through prospecting and the marking out and application for mining tenements. Such activities were not centred around any one area in particular and in fact, were carried out in many areas surrounding Clermont including Miclere, Spring Rush, McDonald's Flats, Copperfield, Bathampton, Blair Athol, Eastern River, Expedition Creek and also in the vicinity of the Clermont aerodrome. It is noted that most of the persons who are responsible for this marked increase in interest in gold, are sapphire miners. This has been caused no doubt by the low sapphire prices and high gold prices. Gold mining at Miclere in the existing two leases was brought to a standstill by collapsed or water filled shafts caused by the excessive wet season in 1974. One of such shafts *The Three Dicks* has water to a depth of 60 metres and no new shafts could be sunk as the country is virtually waterlogged beneath the surface. All banks at Clermont and Emerald have reported that no gold or precious metal was lodged during 1974.

Coal

Blair Athol Coal Pty. Ltd.—Blair Athol started the year with a flooded pit. Some 1 365 ml of water to a depth of 25 metres completely submerged the coal face. Hired pumps were operated round the clock for three months to dewater the mine. Much of the company's loading equipment was lost in the flood. With production shortages in Ipswich the Company was under pressure to maintain and increase coal supplies to the Rockhampton power station. Fortunately it had large stockpiles of crushed coal and was able to meet all commitments during the period of pump-out. At the same time, working with hired equipment, a new pit entry was established to give acces to the coal roof and permit the coal to be worked from the roof down as the water receded. In mid year a new coal supply contract was concluded with the Capricornia Regional Electricity Board and a start was made to re-equip the mine. Progressively over the next six months the productive capacity was stepped up from 150 000 tonnes per year to 300 000 tonnes. A new crushing plant with the capacity to reduce ROM coal to minus 1¼" (32 mm) at the rate of 250 tonnes per hour was completed in December. Two 5 cubic yard (3·82 cubic metres) power shovels, a D8 bulldozer, a 2 cubic yard (1·53 cubic metres) front end loader with a hydraulic lump breaker attachment and a mobile rotary drilling rig replaced equipment lost in the flood. Additional trucks were added to the overburden and coal haulage fleets. By the end of the year the mine had returned to normal operating condition. The labour force was increased from 35 men to 54 men. In production for the year, coal won amounted to 176 082 tonnes consisting of 2 872 tonnes of screened coal and 173 210 tonnes slack, of a total value of $732 501.

Utah Development Company (Blackwater).—A small part of Airstrip Pit box cut was developed. Total overburden removal at Blackwater Mine was 18 126 000 cubic metres including 314 000 cubic metres at Deep Creek Dam. During the year 4 217 575 kg of explosives were used. Deep Creek Dam was extended by 273 Ml to 573 Ml. The change house, office extension, and new laundry block were completed. The haul road extension Besgrove to Steam Coal was in progress and the airstrip was extended and improved near Rangal. Exploratory drilling of 72 holes consisted of 672·7 metres of core drilling and 3801·6 metres of non-core (plug) drilling, and 249 holes of non-core drilling totalling 8 512·9 metres. In land reclamation a new area of 90 hectares was reshaped while a new area seeded amounted to 72 hectares. The total area of good pasture grasses at the end of the year was 33 hectares.

Construction of the Steam Coal Plant by J. Holland for S.E.C. continued. In the industrial area, expansion and modifications by contract let to Thomas and Coffey, consisted of extensions to the main and electrical workshops, a new light vehicle maintenance shop, a new warehouse, an extension to the lube bay, an extension to the change house, new barracks (SMQ) block, new field supervisor's office block with new first aid rooms, extensions to the office block and amenities, and new safety training centre. General improvements to services of electricity, raw and treated water, compressed air, fire hydrants and communications were made. At the end of the year, employees numbered 376 and in addition, there were 29 students (temporary). Screened coal produced amounted to 3 569 982 tonnes of a value of $33 843 429. Coal railed to Gladstone for export amounted to 3 399 619 tonnes.

Utah Development Company and Mitsubishi Development Pty. Ltd. (Goonyella).—During the year, stripping and mining continued in Eureka, Riverside and Cleanskin Pits. Broadmeadow Pit towards the southern end of the mine, commenced in mid-year. Mining has taken place from two new ramps 2 and 3. Overburden removed totalled 26 434 000 cubic metres and 4 607 000 tonnes of raw coal were mined. A total of 4 225 Ml of water was pumped from Eungella Dam, of which 1 795 Ml, 806 Ml and 1 624 Ml were used at Goonyella Mine, Moranbah and Peak Downs Mine respectively. A small number of holes were drilled in the Red Hill and Broadmeadow areas to clarify the coal seam structure and quality. The haul road was extended some 0·8 km south of the mine. From reports submitted during 1974, screened coal produced was 3 394 664 tonnes valued at $34 455 850. During the year 3 383 022 tonnes of coal were railed to Hay Point for shipping.

Utah Development Company and Mitsubishi Development Pty. Ltd. (Peak Downs).—During the year excavation was extended to the south into Yura Pit and considerably to the east in Possum and Ripstone Pits. Haul roads were extended north the Ramp 7 and south past Ramp 3. Total coal mined for the year was 7 946 000 tonnes. The total overburden removed during the year was 48 600 000 cubic metres. Exploration drilling in the mine area was mostly used for quality determination and some structural work. The footage drilled was not large. The No. 2 slimes dam wall was raised 3 metres to its designed level. The capacity of this dam is now approximately 3 000 Ml. The total number of employees at Peak Downs at the end of the year was 530. In production, from figures given, screened coal totalled 5 097 102 tonnes, valued at $48 779 266. Coal railed to Hay Point for export amounted to 4 860 695 tonnes.

Utah Development Company and Mitsubishi Development Pty. Ltd. (Saraji).—The Saraji Mine commenced production in 1974 and at the year's end was nearing its full productive capacity. Coal produced in 1974 was 302 719 tonnes (screened coal) of which 115 653 tonnes were railed to Hay Point for export. The number of persons employed at the end of the year was 320.

The Saraji Mine is the fourth large scale open pit coal mine to be established in Queensland's Bowen Basin by Utah Development Company. Saraji is located to the south of and and adjoining the Company's Peak Downs Mine, Saraji Mine industrial area being approximately 22 km south of the Peak Downs Mine industrial area. Initially the Dysart Seam will be mined but as operations extend deeper, areas of the Harrow Creek Seam will also be mined. The Dysart seam is approximately 6 metres thick in total, although seam partings from zero to more than two metres will be encountered. After beneficiation a high quality coking coal is produced typically of the following analysis—Ash 9·5%; F.S.I. 8–9; Vols. 19·5%; Fixed carbon 71·9% and Sulphur 0·59%. It is expected that in 1975 the first full year of production, sales will be 3 500 000 tonnes rising to 4 572 000 tonnes in 1976 and thereafter. Approximately two thirds of this production is to go to Japan and one third to Europe. At 65% overall recovery some 7 million tonnes of raw coal will be mined annually to achieve the full production rate.

Major works required to establish Saraji include the following:—

More than 40 km of bitumen access road together with culverts and bridges; more than 100 km of high voltage transmission lines and associated sub station installations; a water supply pipeline 113 km long, pumping system and terminal storages; a 24 km extension to the Peak Downs–Hay Point railway line; a raw coal handling system and preparation plant to handle an input of 7 million tonnes per year; major workshops to maintain the very expensive fleet of mine machinery; the field erection of three 47 cubic metre walking draglines each weighing 2 270 tonnes; a completely new town; a substantial expansion to the Hay Point coal port facility.

The first shipment was scheduled for January, 1975, by which time Saraji either shipped or had stockpiled at the port, 300 000 tonnes of first quality coking coal. All those associated with Saraji are justifiably proud of this achievement particularly as it was accomplished during a period of world-wide materials shortage and despite a particularly severe 1973–74 wet season. The establishment of the new town of Dysart to serve Saraji has brought roads, power, telephones and people to an area which was previously one of the most remote and thinly populated in eastern Australia.

Thiess Bros. Pty. Ltd. (South Blackwater).—Production figures for 1974 at South Blackwater Mine totalled 977 252 tonnes of screen coal valued at $10 984 312.

Queensland Coal Mining Co. Ltd. (Leichhardt Colliery).—No coal washery is used for coal won at the underground Leichhardt Colliery, and the coal as mined, is shipped to the Company's own steelworks at Whyalla, South Australia, for internal consumption. During the year 1974, coal produced amounted to 65 898 tonnes. The number of employees at the end of the year totalled 155.

Queensland Coal Mining Co. Ltd. (Cook Colliery).—During the year Cook Colliery has continued its development as a feasibility study. Mining of coal was limited to the roadways linking the bottom of the drift with the shaft in both the Argo and Castor seams. A total of 32 761 tonnes of coal was produced and this product, not washed, was transported by road to Leichhardt Colliery and shipped to Whyalla. The Contractors, Allied Constructions Pty. Ltd., employed 23 men during 1974 and ceased operations at the mine on the 13th December, 1974. The mine will be operated by Queensland Coal Mines labour in the year 1975. No prospecting holes were drilled during 1974.

Queensland Coal Mining Co. Ltd.—(Capella).—In prospecting, 310 bores were drilled with a total metreage of 10 649 metres open hole, and 303 metres core, to extend detailed knowledge of the coal deposits to an overburden depth of 60 metres. Survey of the area was completed. Numerous consultants were retained for engineering feasibility studies on open cut prospect. Reports were received on water supply, power supply, road and railway access, housing, coal handling and washing.

Utah Develoment Company and Mitsubishi Development Pty. Ltd. (Norwich Park).—Norwich Park is still "on paper" at this stage and no construction or mining operations have yet been carried out. During 1974, two Mayhew 1000 drill rigs were utilized to obtain more drilling information for pre-mine development studies. The number of men employed was 16. Machinery used during the year included one field camp accommodating 16 men; two Mayhew 1000 truck mounted rotary rigs and attachments; two water trucks and one D6 caterpillar bulldozer.

Clutha Development Pty. Ltd. (Sirius Creek).—At the end of 1974, nine bore holes had been completed and four were then still in progress. The holes completed comprised a total of 4 787 metres of which 4 391 metres was non-cored and 396 metres cored. Bore holes then in progress comprised a total of 950 metres of which 933 metres was non-cored and 17 metres cored. As at the end of the year five men were employed by Clutha Development in activities ranging from pumping of water fencing of boundaries, to general maintenance of the camp site, buildings and mine. All mining machinery was withdrawn from the mine and sent interstate. An 8 tonnes sample of coal was obtained for American interests. Price, Andersen and Company, drilling contractors, had several drilling rigs at Sirius Creek, and were conducting drilling operations and feasibility studies. Eight men were employed this this company.

Other Mines.—At Bluff, coal mines held by Rhonvale Pty. Ltd. and Noblevale Collieries Pty. Ltd., and by Bluff Collieries Pty. Ltd., were not mined during 1974.

Other Minerals

There was no production of other minerals in the Clermont District during 1974. Solution Mining Pty. Ltd. have ceased all operations on mineral freehold at Copperfield near Clermont, and have left the district. They had for the past couple of years, been engaged in developmental work in and around the old existing mine shafts, to precipitate copper from mine water. Imperial Chemical Industries Australia Ltd. (I.C.I.) have negotiated with both Solution Mining P/L and the owner of mineral freehold, and have for some months since the latter part of 1974, been conducting extensive exploratory work including trenching and drilling, to see if mining for oxidised copper would be a viable proposition.

Gemfields—Anakie and Willows

Mining for gemstones including sapphire, corrundum, zircon, spinel etc. still continued on a large scale throughout the gemfields during 1974, particularly around Rubyvale, Scrub Lead, New Rush, Blue Bird, Sapphire and Reward areas where most of the non-restricted mining tenements upon which any type of machinery can be used without the Warden's prior permission, are located. During the year, 271 applications for claims mainly 66 feet (20 metres approx.) restricted mining claims were received at this office, in addition to 21 applications for special gem claims. Miners rights issued at this office totalled 335 while those issued at Anakie numbered 814.

These figures when compared with figures for the previous year tend to indicate a decrease in the number of permanent miners and/or tourists at the fields during 1974. However an accurate estimation of such decrease could not be made. As at the end of 1974, approximately 560 alluvial mineral claims and restricted mining claims were registered at this office, in addition to 80 special gem claims. Again in 1974, there was little interest by sapphire miners in those areas where special gem claims can be taken up, namely Tomahawk Creek and Goanna Flats. This being in respect of permanent sapphire miners. However as in the past, the Scrub Lead area was again in demand. Several miners pegged approximately 20 mining leases and claims to the north of Rubyvale on the Clermont Road near the Kettle Creek Crossing, and some in the vicinity of Mt. Ball. It would appear however that most of these tenements are no longer required as tests conducted apparently did not yield the desired results. Reports indicate that Willows and Tomahawk Creek areas were again popular with the tourists, mainly because of the quiet atmosphere surrounding these areas and the availability of shallow sapphire bearing wash. Numerous complaints and mining breaches were investigated and inspections made by the Mines Inspector and Assistant Inspector from Rockhampton and the Warden Clermont. Three miners were convicted of breaches of the Mining Act and had fines totalling $1 000 in addition to costs, imposed. During the year Departmental Surveyors were busy surveying alluvial mineral claims extending from Sapphire to Rubyvale including those in the New Rush, Blue Bird and Scrub Lead areas. In addition to A.M.C's, special gem claims in the Scrub Lead area were also surveyed as were some other tenements and a quantity of homestead leases throughout the fields. No actual figures as to the amount or value of stone won during the year were available and it is understood that Thai buyers again predominated by far, in the purchase of gemstones.

P. L. MITCHELL, Warden.

CLONCURRY DISTRICT

Overall interest being shown in this district has again decreased. There are 78 fewer leases and applications on hand than at this time in 1973. The total area taken up during 1974 was 839 hectares less than in 1973.

The total gross production increased quite considerably, to a value of $1 726 822. This was due to significant increases in copper and silica production. Details are set out in Table "A." In 1973 there were 54 producing mines, 22 in excess of $5 000 gross, whereas in 1974 there were 64, 28 being in excess of $5 000. Details are set out in Table "B".

Due to the granting of most of the applications on hand at the end of 1973, there was a fourfold increase in the number of exemptions, mainly on the grounds that further exploratory work was required. There was, of course, no production or exploration at Mary Kathleen, but on the 1st August, 1974, recommissioning of the site commenced with a view to achieving full production by the end of 1975. The 1974 programme centred around rehabilitation of houses and town facilities together with overhaul of basic plant site services. Employment rose from 19 to 51.

Table A

COMPARATIVE RETURN SHOWING THE PRODUCTION AND VALUE OF MINERALS FOR THE YEARS 1973 AND 1974

Mineral	1973		1974	
	Yield	Value	Yield	Value
		$		$
Copper (Tonnes)	482	601 351	848	1 129 268
Silver (Grams)	38 497	1 933	784	93
Limestone (Tonnes)	16 701	111 896	16 991	134 140
Silica Flux (Tonnes)	6 243	30 615	67 415	463 321
Quartz (Tonnes)	..	..	..	..
Gold (Grams)	..	..	258	242

Table B

COPPER PRODUCTION—1974

Mine	Producer	Ore	Yield	Value
		Tonnes	Tonnes	$
Alphine	McKelvey, Douglas and Cummins	256·07	5·411 3	7 992
Answer	P. N. Roos	987·28	49·368 0	68 341
Blue Star	C. J. Kirkgarde	69·04	6·628 0	9 196
Copper Top	A. W. O'Keefe	383·45	9·143 8	13 174
Dundee	J. P. Bulfin	65·87	4·199 7	5 237
Edna	R. T. Lawlor	215·33	14·212 0	14 839
Edna May	I. Sipos	1 760·59	53·302 8	79 882
Fairfield	W. E. Presley	302·27	14·340 3	21 758
Federal	Federal Mines	247·75	4·927 4	7 675
Flagship No. 1	R. T. Lawlor	439·72	27·849 5	38 325
Hampden	A Metcalfe	121·11	8·870 1	9 485
Hampden	Hampden–Kuridala Mines	3 445·53	158·235 1	182 046
Hemco No. 2	A. W. and S. A. O'Keefe	107·87	4·100 6	5 959
Iron Ridge East	A. W. and S. A. O'Keefe	242·67	7·078 9	12 006
Kings Cross	Farr and Moroney	246·2	13·549 3	21 047
Little Trumby	A. B. and F. King	109·98	4·535 9	6 224
Magpie	C. Cummins	1 351·82	38·895 5	50 906
Melba	Windus, Hawkins and Finch	335·21	19·477 4	26 451
Mount Glorius	L. J. O'Keefe	219·31	4·423 2	6 376
Mount Lindsay	J. G. and H. S. Scorgie	349·65	13·662 8	19 155
Mount Norma	C. A. and T. M. Ah Wing	452·71	20·941 6	23 928
Orphan	Jackson and Kennedy	310·63	23·754 5	34 300
Prince of Wales	U. and U. Marchioli	202·95	4·098 4	7 031
Sunday Folly	D. J. Symons	81·42	5·510 0	8 790
	Chauzzi, Grassano			
Surprise	Chambers and Lamers	1 400·36	156·871 0	216,714
Trafalgar	E. Messale	904·39	39·321 1	56 179
Trafalgar North Shaft	Messale and party	161·76	10·239 4	10 930
Warwick Castle	Ah Wing, Wilson and Tonks	1 628·32	44·249 4	61 275
Winston Churchill	Valiant Explorations	87·53	8·017 0	11 327
Thirty-six mines with production under $5 000		1 453·00	50·079 1	67 273
Total		17 939·79	825·293 1	1 103 821

Table C

COPPER PRECIPITATE PRODUCTION—1974

Mine	Producer	Yield	Value
		Tonnes	$
Answer ..	P. N. Roos	2·971 1	2 912
Hampden ..	Hampden–Kuridala Mines	1·863 9	2 651
Wee McGregor	Eastern Copper Mines ..	17·955 6	19 884
Total		22·790 6	25 447

Table D

SILVER PRODUCTION—1974

Mine	Producer	Yield	Value
		Grams	$
Falcon	C. and W. Ah Wing ..	784	93

Table E

LIMESTONE PRODUCTION—1974

Mine	Producer	Yield	Value
		Tonnes	$
Lime Creek ..	J. A. and S. Peloso ..	16 991·14	134 140

Table F

SILICA PRODUCTION—1974

Mine	Producer	Yield	Value
		Tonnes	$
Blockade ..	J. A. and S. Peloso ..	30 849·47	202 602
Dry Dog ..	D. G. Andrews ..	218·52	1 931
Hardway ..	Kalkadoon Mining ..	11 597·63	62 917
Lady Hall ..	D. G. Andrews ..	22 940·08	187 937
Notlor Ext. No. 2	W. A. Penman ..	195·90	1 342
Rosebud No. 2 ..	D. G. Andrews ..	1 613·57	6 592
Total		67 415·17	463 321

Table G

GOLD PRODUCTION—1974

Mine	Producer	Yield	Value
		Grams	$
Edna	R. T. Lawlor	37	34
Salisbury ..	Douglas and McKelvey	221	208
Total		258	242

T. J. BECK, Warden.

COOKTOWN DISTRICT

Gold

There has been only prospecting activity on gold fields in the district and production figures are nil for all fields.

Tin

As regards the Cooktown District, 4 tonnes 997·2 kilograms were produced for a return of $17 774. Most of the mining operations are at present carried out by one or two man concerns. Enterprise Minerals Pty. Ltd. have not resumed operations on the Palmer field due to uneconomic values.

Silica

Cape Flattery Silica Mines Pty. Ltd. on their leases at Cape Flattery reported the production of 453 221 tonnes valued at approximately $1 468 812.

Scheelite

Frost Enterprises Pty. Ltd. on their mining leases 441 and 442 at Mt. Hurford on the Palmer field did not have any production. Their operations have been suspended to allow further investigations of recovery process and detail work on mineral deposition.

R. J. MUIR, Acting Warden.

CROYDON AND GEORGETOWN DISTRICTS

CROYDON

As in previous years there was very little activity in the Croydon District. Currently there are 22 mining leases covering an area of 1 635·5 hectares.

Gold

The old Croydon field contains some of the richest auriferous surface shoots with most of the known deposits having been worked to some depth. Mr. P. J. O'Rourke has shown interest in the old *Golden Gate* workings and has made application for a number of leases extending over 1 280 hectares. There is a general lack of surface water in the Croydon District for mining purposes although a heavy wet during the year did supplement the underground reserves.

GEORGETOWN

The whole of the Georgetown Mining District was affected by the long and heavy wet experienced during the year. As conditions improved there was a noticeable increase in activity, although this was confined to prospecting and sampling. During the year 19 applications were received for mining leases. The majority of the applications were applied for by Mr. P. J. O'Rourke on Fiery Creek. These applications increase the area Mr. O'Rourke has and there are now 22 mining leases comprising the *Maureen* group of leases. A programme of drilling was interrupted by the wet and a survey of all the leases was carried out with a view to amalgamation.

There was no reported production from the district during the year.

AGATE CREEK

The road to the Agate Creek area was affected by rain for the first four months of the year. An improvement of road conditions saw an increase in the number of visitors to the area. This area has proved very popular with the tourists and gem hunters for many years.

Provision is made by way of claim tenure to accommodate the serious miner wishing to work the agate. However most of the activity is generated by week-enders.

H. T. SPICER, Warden.

CUNNAMULLA DISTRICT

The only mineral produced in this district during the year was opal. At the close of 1974 there were 99 claims and 5 leases current and a further 5 lease applications in process. A total of 157 miner's rights was issued during the year. The estimated value of opal production was $100,000. Once again, there was increased interest in opal mining in the Yowah area, although mining activity in the Duck Creek area has declined.

P. X. SMITH, Acting Warden.

EIDSVOLD DISTRICT

Gold

The only producer in the district during the year was Golden Plateau No Liability, at Cracow. This company produced 34 551 tonnes of ore from which were obtained 303·28 kg of gold and 551·46 kg of silver. Compared to last year's production, there was a decrease both in gold and silver won.

B. J. BUTLER, Warden.

GLADSTONE DISTRICT

CANIA AND KROOMBIT

M.Ls. 574 *and* 575 (Noranda Australia Limited).—No mining or exploration work was carried out on these leases during the year.

GLASSFORD CREEK

M.Ls. 394, 576 577 *and* 578 (Noranda Australia Limited).—No mining or exploration work was carried out on these leases during the year.

M.L. 455 (Mount Isa Mines).—Some rock chip sampling was carried out and then the lease was surrendered on the 4th September, 1974.

M.L. 682 (Carpentaria Exploration Company Pty. Ltd.)—No mining or exploration work was carried out on this lease during the year.

LANGMORN

M.Ls. 393 *and* 489 (Ambrose Limeworks Pty. Ltd.).—Four men were employed on the working of these leases by the open-cut method. A total of 1 876 tonnes of limestone ore was extracted and treated for a return of $30 016.

M.Ls. 464, 467, 468 *and* 672 (W. F. J. Hamilton).—Three men were employed during the year taking samples only. Radiometer surveys were made over the full area of the leases.

M.Ls. 698, 699, 700 *and* 701 (Darra Exploration Pty. Ltd.).—Four leases totalling about 2 274 hectares in area have been applied for, for the purpose of mining limestone and clay. These applications have not yet been dealt with in the Warden's Court.

Lease No. 702 (Life Line Industries).—This lease containing 20·2 hectares has been applied for, for the purpose of mining limestone and marble. The application has not as yet been dealt with in the Warden's Court.

MONAL

M.Ls. 415 *and* 416 (Mount Isa Mines). Geological mapping, geophysical surveys, soil and rock chip sampling were carried out during the year. The leases were then surrendered on the 23rd December, 1974.

M.Ls. 561 *and* 569 (Noranda Australia Limited).—No mining or exploration work was carried out on these leases during the year.

MOUNT CANNINDAH

No activity was reported in the area during the year.

GLADSTONE

M.L. 404 (Commonwealth Aluminium Corporation Limited).—An average of 12 men were employed during the year. A total of 28 900 tonnes of mullock was raised and 128 253 tonnes of limestone ore with an estimated content of 80 per cent. were extracted, and valued at approximately $461 710. A total of 121 492 tonnes of ore was delivered to Queensland Alumina Limited's plant at Gladstone and 6 761 tonnes remained on stock pile on the lease. On this lease 11 200 metres of drilling of holes 6·35 centimetres in diameter was carried out during the year.

M.L. 412 (Frost Enterprises Pty. Limited).—The lease was worked in conjunction with *M.L.* 404 held by Commonwealth Aluminium Corporation Limited with an average of 12 men employed during the year. A total of 3 070 cubic metres of mullock was raised and 29 250 cubic metres of limestone ore with an estimated content of 80 per cent. were extracted. Drilling of holes 6·35 centimetres in diameter for 4 600 metres was carried out during the year.

M.Ls. 637, 638 *and* 639 (Mineral Deposits Limited).—No mining has been carried out on these leases during the year. New lease applications (*Nos.* 695, 696 and 697) containing approximately 1 467 hectares have been applied for, for the purpose of mining rutile, zircon, ilmenite, monazite, magnetite and leucoxene, and they are situated in the Parish of Eurimbula between Round Hill Head and Bustard Head. These applications have not yet been dealt with in the Warden's Court.

M.Ls. 438 *to* 441, 466, 476, 481 *and* 641 *to* 652 (Murphyores Incorporated Pty. Ltd.).—No mining operations were carried out on these leases during the year. However, during the year concentrates stockpiled from previous mining operations were treated in the dry mill of Murphyores at Barney Point, Gladstone, resulting in a production of 146 tons of rutile and 186 tons of zircon.

M.Ls. 504, 505 *and* 671 (Noranda Australia Limited).—These leases are in the Parish of Balaclava. No mining or exploration work was carried out on them during the year.

R. A. J. MILLER, Warden.

GYMPIE DISTRICT

Gold

No production of gold was reported for the year.

M.L. No. 564—*Gympie* (Gympie Eldorado Gold Mines Pty. Ltd.).—There was no development work done on the lease during the year. However, the Company is hoping to enter into a farm-out agreement and to sink a further shaft subsequent to the completion of a boring programme. No gold or minerals were recovered.

Manganese

M.Ls. Nos. 217, 218, 219, 220, 222, 223, 224, 225, 227, 234, 238, 239, 244, 247, 256, 257, 297, 355, 356 *and* 625—*Gympie* (T. H. Sanders and Others).—There was no development work done on the above leases during the year. An order from overseas for this class of manganese, namely high silicious manganese, is being sought.

Lime

M.Ls. Nos. 118, 122, 163, 164, 253 *and* 354—*Gympie* (Tamaree Lime Works).—Production for the year totalled 7 833 tonnes of limestone and serpentine, value being $58 984. All minerals were mined by the open-cut method.

M.Ls. Nos. 608 *and* 632—*Gympie* (Didcot Lime Co. Pty. Ltd. and Rex Sawtell, respectively).—These mining leases are being worked by Flinders Dolomite Pty. Ltd. Production for the year on these leases totalled 1 041·8 tonnes of limestone, value being $9 376. All minerals were mined by the open-cut method.

Clay

M.Ls. Nos. 290 *and* 692—*Gympie* (A. R. Burch).—A total of 5 tonnes of pottery clay valued at $10 was recovered.

M.Ls. Nos. 273, 305, 333 *and* 334—*Gympie* (Cooroy Brickworks).—Mining at *Nandroya Pit* (*M.L.* 273), *McGilchrists Pit* (*M.L.* 305) and *Greber's Pit* (*M.L.* 334) was carried out by the open-cut method and a total of 41 271 tonnes of clay was produced, the value at the grinding pan being $28 040. A total of 35 050 tonnes of clay was treated for a return of 8 618 270 bricks.

Copper, Silver, Lead and Zinc

M.L. 265—*Gympie* (N. T. Russell and Others).—During the past year exploration work was carried out. A complete road traverse from the datum peg was made. The top workings were clearly defined thereon and a geo-chemical

survey was carried out for the purpose of assessing the size and depth of the lode. In this complex ore there appears to be an admixture of galena with copper and a large proportion of zinc. The lessees now propose to install a crusher and mill and may, should they find it more economical, install a small treatment plant for the purpose of producing a concentrate. Also in the past year considerable road work and clearing has been carried out. It is the intention of the lessees to produce mineral orders to supply several companies who have recently tested the quality of the ores and it appears that full scale production should get under way shortly. It is intended that local machinery and labour will be employed on this project.

M.Ls. Nos. 302 *and* 303—*Gympie* (H. Bussell).—Development work on the lease consisted of the opening up of one new seam. Production is not to commence until the market improves as the current price of copper is too low.

Magnetite

M.Ls. Nos. 607, 615, 621, 629—*Gympie* (Commercial Minerals Pty. Ltd.).—A total of 19 020 tonnes of magnetite was produced during the year. Bismuth concentrates totalling 66 tonnes was produced, averaging about 5 per cent. Bismuth. These concentrates have been stockpiled. Other work for the year consisted of road making and diamond drilling.

Mineral Sands

D.L. Nos. 571, 572, 574 *and* 587 (Cudgen Rutile No. 3 Pty. Ltd.).—During the year production by this Company amounted to 11 370 tonnes of rutile valued at $2 058 856 and 14 957 tonnes of zircon valued at $1 589 423.

General

The overall value of production in this district showed a marked increase over the previous year, with the beach minerals showing the most marked increase in values. Interest is still being shown in the search for base metals, particularly in the north-western parts of the district and the issue of miners' rights and permits to enter, continue at a high level.

S. J. DEER, Warden.

HERBERTON DISTRICT

Although the number of mining leases and applications in force continued to decline, the total at the end of the year being 913 as compared to 1 022 at the end of 1973, the gross value of production in this district for the year 1974 was in excess of $6 million, which is a marked increase over the $3·7 million in 1973. The number of miners homestead leases and applications also declined as only 65 new applications were lodged during the year, whereas 130 were lodged during 1973. However, the production and exploration evident from the reports set out hereunder indicate a soundness in the industry in this district contrary to the impression given by the decline in the number of leases and applications.

The dredges of Ravenshoe Tin Dredging Limited at Innot Hot Springs and of Tableland Tin Dredging N.L. at Mount Garnet, together with the mill of Loloma Limited at Irvinebank, remained the major producers, and the State Treatment Works at Irvinebank and the Emuford Battery were again the centres for treatment of public ores. Walkerminco's concentrator at Herberton processed copper ore from the United North Australia mine at Watsonville from January to September, except for a five week close down during April and May for relining the ball mill and other maintenance. This plant closed down in September and was placed on a care and maintenance basis.

Reports from various miners are set out hereunder:—

LODE TIN

Herberton

Rip and Tear (C. E. & J. E. Wyatt).—During the year 30 tonnes of ore were treated for a yield of 3·5 715 tonnes of tin concentrates. Nine metres of shaft sinking and 4·5 metres of rising was carried out, and good tin is still showing. Also 152·5 metres of percussion drilling was completed, but nothing of any value was obtained from this test programme.

General Grant, Poor Stroller, Canberra-Phoenix, Great Northern (F. L. Stamp).—Prospecting on the *General Grant* showed nothing of note, and 6·1 metres of sinking on the *Poor Stroller* failed to locate any ore. On the *Canberra-Phoenix* the seam of ore narrowed and is not economical to work, but on the *Great Northern* 181 kg of concentrates were produced valued at approximately $580.

Sandra Mary (S. D. Smith).—The main shaft has been sunk to a depth of 33·5 metres and on that level driven 4·8 metres in a northerly direction, 2·4 metres westerly and 4·8 metres southerly. On the 24·4 metres level a drive has been made easterly for 4·2 metres and on the 18·3 metres level a drive for 1·2 metres westerly and one 4·8 metres southerly. A total of 37·5 tonnes of ore was treated for 16 bags of tin valued at $3 627. Also 30·5 metres of test boring was done.

Bakerville

Peacemaker (C. C. & R. A. Pedersen).—The crosscut was extended a further 12·2 metres to make way for a new ore pass, and this is 57·9 metres from the entrance of the bottom tunnel. A total of 369·8 tonnes of ore was raised for a yield of 10·607 tonnes valued at $34,888. The ore was obtained from the stope above the bottom tunnel level.

Watsonville

Sylvia (H. V. Collett).—Work on driving No. 3 tunnel from 3·6 metres from the portal to a total of 51·8 metres commenced in September to get in under the line of lode. The drive was then turned 52° and driven a further 4·5 metres. So far no ore has been encountered.

Irvinebank

Alexander (R. Bornholt).—Two men were employed raising 30·4 tonnes of mullock and 50·8 tonnes of ore which was treated for a return of 1·484 tonnes valued at $4 102. Seven metres of sinking and 2·4 metres of driving at the 36·6 metres level were done. A fault which cut the ore body was struck. Also five 3-metre drill holes showed no values.

Three-In-One (C. V. Hooley).—At a total depth of 20·7 metres the old western drive was cleaned out and stripped for 10·6 metres. Approximately 71·1 tonnes of mullock were raised and rails laid to the end of the drive. A small pass about 9 metres along the drive going through into an old stope was timbered off and a new pass was made at the end of the drive which came out on the western wall of the old stope from which approximately 12 tonnes of stullings containing about 1 per cent tin were pulled. Three tonnes of ore were broken from the old stope. No ore was treated. The soft lode appears to continue in a westerly direction.

Croesus and Goolagong (P. R. King).—A new shaft was sunk to a depth of 5·4 metres in an endeavour to strike a lost lode in the *Croesus*. No yield was made. On the *Goolagong* 50·8 tonnes of ore will have to be rendered down. The depth is 14 metres.

Great Southern, Janne, Red King (W. S. Byrne).—A total of 887·5 tonnes of ore from the *Great Southern* was treated for a yield of 10·482 tonnes valued at $30 687. Also 457·2 tonnes of the old dump material was crushed. A new lode in the eastern portion of *Janne* was worked and 406·4 tonnes of ore were broken. A total of 318 tonnes was crushed for a yield of 7·531 tonnes and prospects look good. A small amount of dozing was done at the *Red King*.

Tyrconnel, Boomerang, Red Baron (E. S. W. May).—After stripping to allow a bend to be made at the 30·5 metres mark in the main adit and installation of line, driving for a distance of 6·1 metres was done with much difficulty as the ground is very broken. Approximately 2 tonnes of ore with an estimated 1 per cent, was stacked in the adit. Long bore holes are planned and the drive will be continued if values are evident. No ore was crushed.

St. Joseph (W. T. Quirk).—A new road from the main Coolgarra road was made and an open cut was put into the mouth of the adit for 15·2 metres for wheeling out ore. Seven tonnes of ore were taken and treated at the State Treatment Works for a return of 145 kg, which also contained 14 kg. of wolfram. The adit was driven about 9·5 metres along the lode which averages about 1 metre in width and produced 39·6 tonnes of ore which returned 533 kg. This also contained wolfram of about 17.5 per cent. During September and October, the adit was driven a further 9·5 metres and 31·4 tonnes of ore were produced which returned 465 kg of tin concentrates with 12 per cent. wolfram. Stoping was carried out above the adit to within a few metres of the surface and 137 tonnes of ore were produced. The lode has been mineralised from the surface, containing arsenic and white iron, and sinking is now being done to see if it will clear up.

Various Leases (Loloma Limited).—A total of 52 097 tonnes of ore was mined and 48 805 tonnes were milled for a production of 843·4 tonnes of concentrates containing 437·33 tonnes of tin with an estimated value of $2 262 000. In addition 399 153 tonnes of overburden were mined. Drilling continued for mining in the open-cuts and for exploration.

Production drilling amounted to 3 032 metres, and exploration drilling totalled 972 metres. Diamond drilling at the *Great Adventure*, in 3 holes, amounted to 182·7 metres. Development work carried out at the producing mines totalled 703 metres, including drives, crosscuts and raises. At the end of the year 128 men were employed.

Lady Agnes, Lady Agnes Extended (G. W. & B. F. Perkes).—Driving has been carried out for 12·2 metres southeast from the bottom of No. 1 winze, 9 metres below the main adit level, and 24·4 metres on the south-western end. Also on this end rising to the main adit level, 201·4 tonnes of ore were produced which returned 5·591 tonnes of concentrates valued at $19 845. At approximately 76 metres and 91 metres, two passes have been cleaned for ventilation. No. 1 winze, No. 2 winze and No. 3 winze are 9·5 metres, 16·7 metres and 9·5 metres respectively below the main adit level.

Silver Valley

Little Frogs (M. Z. Brooks).—A total of 21·1 tonnes of ore was treated for a return of 0·8718 tonnes of tin valued at $3 038. The total depth of the mine is 9·7 metres and driving done was 3 metres. Small tin samples are showing.

Morning Cloud, Mount Tin (T. W. Allan).—A total of 1 946 tonnes of ore was treated for a yield of 5·685 tonnes valued at approximately $18 805. The *Mount Tin* open-cut is 10·6 metres wide, 54·8 metres long and 3·6 metres deep, and the *Morning Cloud* is 54·8 metres long, ranging in width from 10·6 metres to 16·7 metres and 4·5 metres deep. Values extend to both ends and the floor. Approximately 508 tonnes of overburden have been removed revealing tin bearing lode some 6·1 metres wide approximately 183 metres north from the *Morning Cloud*.

Happy Birthday (G. Maric).—A total of 136 tonnes of ore was treated for a yield of 5·435 tonnes valued at $13 500. Approximately 16 metres of shaft sinking and 9 metres of driving and cross-cutting has been done. Two men were employed.

Stannary Hills

You and Me (Hopetoun Minerals N.L.).—As operator for a joint venture partnership between Nickelseekers Limited and Hopetoun Minerals N.L. a reconnaissance programme into the economic potential was completed. Thirteen sludge-drill holes totalling 211·6 metres were drilled from the 18·3 metres, 33·5 metres and 42·7 metres levels to test for ore adjacent to the stoped openings. Overall results were encouraging and several high grade intersections were obtained. The ore zone below the 42·7 metres level was not tested and the mine has since been allowed to fill with water. A total of 1 142·5 metres was drilled in 64 holes on this with *Red Hill, Kitchener and Kitchener Extended*. No mining was carried out.

Emuford

Starlight, Dove, Gregory (A. J. Smith).—Approximately 5 tonnes of ore from surface prospecting on *Starlight* were put through Emuford Battery for 50 kilograms of tin. Similar results were obtained from the *Dove*, and approximately 150 kilograms of tin were recovered from the *Gregory*. A total of 259 kilograms valued at $978 was won.

Ivy, Royal Standard, Gem (J. W. Green & Son).—On the *Gem*, the open-cut was commenced low on the hill to hit the line of lode, and did so ahead of the old workings, and was then turned to follow the line of lode to connect with the old workings. The hanging wall in the old workings was shot and cleaned out. A patch of ore was taken from the bottom to a depth of 1·8 metres below cut level. The depth from the surface to the bottom of the face of the open-cut is approximately 18 metres and the overall length of the cut is approximately 30 metres. Total ore raised was 121·9 tonnes for a yield of 1·534 tonnes. No work was done on the *Ivy* or the *Royal Standard*.

ALLUVIAL TIN

Innot Hot Springs

Various Leases (Ravenshoe Tin Dredging Ltd.).—Dredging operation were carried out on *M.L.s* 6463, 6490 *and* 6495. Running time of 6 335 hours at 72 per cent. of possible running time gave a throughput of 1 589 144 cubic metres for a recovery of 281·97 tonnes for a gross return of approximately $1 142 752. During the year the dredge moved from the northern side to the southern side of Highway 1, necessitating the deviation of the highway and telephone and power lines. A dam containing 8 415 cubic metres has been built and this should effectively contain early storms which would minimize early pond effluent escaping into the Herbert River. Work necessary to maintain slimes disposal areas in operative condition has been carried out. Mobile plant No. 1 ceased operations in November. This plant treated 99 821 cubic metres of wash for a recovery of 59·48 tonnes, valued at approximately $222 450. This plant will be moved to the Emu Creek area. Mobile Plant No. 2 treated 16 259 cubic metres for a return of 9·04 tonnes valued at approximately $25 535. In addition prospecting work of 193 metres of percussion drilling, 163 metres of pits and 712 metres of trenching was carried out. The total number of men employed was 77.

Mount Garnet

Various Leases (Tableland Tin Dredging N.L.).—The dredge proceeded in an easterly direction until 22nd January, 1974, then turned northerly until 12th March, then easterly along the high flat until 28th June, whence it re-entered Return Creek, opening out to a 301·75 metre face. It then proceeded north-easterly until 1st October, then easterly following Return Creek. A total of 2 072 385 cubic metres was treated for a yield of 567·468 tonnes of concentrates. Drilling of a total of 74·72 metres was carried out. Seventy men were employed.

Maree (E. K. & C. Petersen).—Approximately 3 060 cubic metres of wash were treated for a return of 4·13 tonnes of concentrates valued at $15 126. A further 2 687 cubic metres of wash material were stockpiled.

Rankine and Dogleg (Wilcox Brothers).—Approximately 3 825 cubic metres of wash were treated for a return of 2·199 tonnes. The *Dogleg* lease is under mud and water and unworkable.

Various Leases (Black River Mining Co.).—A total of 3 665 cubic metres was treated for a return of 3·645 tonnes.

Silver Valley

Elsie Elizabeth and Patrick (K. Go Sam).—A total of 204·4 tonnes of material was treated for a return of 4·9 tonnes valued at $17 943. One man was employed.

Charmaine (D. Charmaine).—During the year 680 cubic metres of wash were treated for a return of 1·097 tonnes of tin which assayed an average of 71 per cent. Sampling was also carried out and a dam and a road were constructed. During December 600 cubic metres of wash were stockpiled.

Irvinebank

Kate's Deer and Caravan (M. & L. Eden).—A semi-mobile plant built in Sydney was transported to the lease and set up and a dam was placed across Emu Creek. Approximately 4 590 cubic metres of wash were pushed up by contract and when another loader was hired, it enabled the plant to achieve its production rate of 2 677 cubic metres a month. Production was 9 945 cubic metres at a grade of 544g/cubic metre, returning 7·256 tonnes of concentrates.

Watsonville

Jamie Creek Leases (Plateau Tin & Expl. P/L.).—A total of 38 084 cubic metres of material was treated giving a return of 23·388 tonnes. Work has been done along the banks of Jamie Creek to a maximum depth of 3·6 metres.

Herberton

X2 Extended (L. G. Stewart).—A shaft has been sunk to a depth of 28 metres with a drive westerly for 6 metres and another easterly for 6 metres. A small quantity of wash was encountered. These workings were left and an old shaft was cleaned out to a depth of 6 metres and the collar cemented.

COPPER

Stannary Hills

Black Onyx (Teos Mines N.L.).—Surface prospecting only was done during the year.

Watsonville

United North Australia (Walkerminco).—During the year work continued on the Baal Gammon ore body, which is connected to the surface by a 60 metre decline adit. Ore mined totalled 5 236 tonnes which was processed at Herberton for a return of 480·62 tonnes of copper concentrate, calculated to contain 105·6 tonnes of copper and 201·86 kilograms of silver of a value of approximately $108 312. A total of 10 men were employed. Due to the collapse of the copper market, operations ceased in mid September and the mine was put on a care and maintenance basis.

WOLFRAM

Herberton

Wellington Extended (F. L. Stamp).—No ore was treated, but 1 tonne of 2 per cent. ore was saved.

FLUORSPAR

Mount Garnet

Various Leases (Comalco Ltd.).—The leases were treated as a single prospect. Some low grade ore reserves have been established and work is being continued in an attempt to increase ore grades. Work carried out during the year included assaying, detailed magnetometer surveying and detailed geological re-mapping of selected areas and diamond core drilling of a total of 281·4 metres. Reserves of fluorite ore with an average overburden to ore ratio of 0·8:1 and between 10·5 pe cent. and 11 per cent. fluorine content were established in the leases jointly held by Toledo Minerals Limited and Commonwealth Aluminium Corporation Limited. It is not economically feasible to mine this ore and exploration is continuing in an attempt to locate further ore bodies.

Table A

LIST OF TIN CRUSHINGS IN THE HERBERTON MINING DISTRICT FOR THE YEAR 1974

Name of Mine or Owner	Ore Treated	Yield	Value
	Tonnes	Tonnes	$
Alexander	10·363	0·541	2 067
Alexandria	41·140	0·977	3 340
Amego	14·726	2·767	10 913
Anniversary	15·590	0·187	632
Big Biscuits	23·110	1·011	3 824
Boomerang	51·511	0·358	1 023
Boundary	34·340	0·300	706
Brass Bottle*	521·596	18·231	56 000
H. V. Collett	8·630	0·154	327
Comet (Ada Exploration)	622·100	7·317	24 991
Comet (J. Katzlirsch)	115·930	1·829	6 168
Consolidated	172·060	0·670	2 295
Double D	82·290	0·594	1 608
Dreadnought*	45·510	0·643	1 935
Dulcie Ana	62·180	0·302	998
E. J. Edwards	16·760	0·192	535
Eureka*	140·810	0·741	2 193
Gem*	121·920	1·093	3 774
Gift	161·560	0·746	1 976
Gilmore*	5·334	0·053	230
K. Go Sam*	6·090	0·146	550
Great Southern	887·581	10·482	30 687
Green Mamba*	3·302	0·095	330
J. Hardingham*	10·892	0·477	1 100
Herberton Developments Pty. Ltd.	65·530	0·342	1 244
D. D. Hilla, Marie and Hilla*	32·004	0·794	2 960
Jester	29·260	0·235	940
Jocelyn	14·529	0·051	181
Kangaroo	49·378	0·256	784
Lady Agnes	201·406	5·591	19 845
R. Lees	19·150	0·082	287
Leslie	13·411	0·067	220
Little Frogs	21·120	0·871	3 038
Loloma Mining Corp. N.L.*	48 807·000	843·391	2 390 804
E. M. Ludlow and L. G. Ward	42·266	0·160	641
Males Gully*	0·660	0·094	350
W. McGrath and K. Lees*	275·844	1·930	6 170
Morning Cloud*	117·043	0·639	2 000
S. Moroney*	33·520	0·210	600
Mount Tin*	1 828·783	5·046	16 805
Peacemaker	369·810	10·607	34 888
Premier	6·090	0·046	162
N. Portch and R. Boston	7·210	0·613	1 400
T. Price	38·610	0·249	836
Rainbow (Peters and Party)*	932·608	7·665	25 481
Ravenshoe Tin Dredging*	..	5·108	15 400
Red King	32·350	0·175	425
Rich Hill	9·140	0·240	683
Sandra Mary	15·180	0·204	674
S. D. Smith	22·352	0·786	2 953
Smiths Creek	74·100	0·787	2 819
Spotty No. 2*	31·700	0·048	380
Starlight	10·160	0·259	978
St. Joseph*	79·224	1·140	2 902
Sunshine	23·774	0·052	237
Surprise	1·110	0·148	603
Tableland Tin Dredging N.L.*	15·240	4·522	12 200
W. Tuma and M. Rumble*	7·668	0·025	80
D. M. Vance	26·162	1·275	1 204
C. Walker and M. Annin	1·530	0·323	1 366
L. G. Ward	12·800	0·125	392
L. Watson*	15·840	0·325	800
J. Wyatt	10·660	1·960	7 344
J. and L. W. Wyatt	..	1·105	3 769
Total	56 469·547	947·452	2 723 047

*Estimated value.

Table B

*RETURN OF ALLUVIAL TIN RECOVERED FROM THE HERBERTON MINING DISTRICT DURING THE YEAR 1974

—	Yield	Value
	Tonnes	$
Ada Explorations	4·034	12 925
Black River Mining	6·254	22 670
T. Brodie	0·108	298
D. Davies	0·470	1 773
J. A. and E. Dawson	0·052	214
T. Dore	0·098	416
Double Jig Mining	1·857	5 896
Eden Exploration	7·671	27 071
J. Edwards	0·093	364
J. Evans	0·186	636
W. J. Fitzgerald	0·164	606
E. Forest	0·318	993
T. J. Forest	0·162	471
K. Go Sam	4·914	17 943
G. Gustafson	0·033	101
P. L. Hodges	0·785	3 132
T. Hyatt	0·102	386
Jack and Newell Pty. Ltd.—Mount Garnet	0·112	196
P. King	0·153	604
V. D. McAlister	0·114	414
McDonald Brothers	14·710	37 464
R. Miller	0·040	132
S. Moroney	0·156	665
F. and E. Panzenbock	1·541	4 092
F. W. Paschill	0·052	106
E. K. and C. Petersen	4·130	15 126
W. Quirk	0·127	350
J. Sherrin	2·167	9 633
F. Stamp	0·133	449
Steward Brothers	50·447	15 515
F. W. Stralow	6·336	20 756
D. M. Vance	0·160	450
L. A. Watson	0·179	499
M. T. Whelan	0·109	397
Wilcox Brothers	2·199	8 376
K. and D. Willman	2·397	5 885
J. and L. Wyatt	2·465	8 412
Plateau Tin and Exploration Pty. Ltd.*	23·358	70 500
Ravenshoe Tin Dredging Ltd.*	356·477	1 170 400
Tableland Tin Dredging N.L.*	571·764	1 726 500
Total	1 067·077	3 332 816

* These figures are based on recorded purchases of ore buying firms.

H. G. SMITH, Warden.

INGHAM DISTRICT

There was some activity in the district during 1974 generally. In relation to alluvial tin there has been an increase on the part of the individual and non-proprietary producers.

Tin

Associated Tin Smelters Pty. Ltd. reported having treated tin concentrates on account of Petersen Brothers to a value of $18 675 approximately and also reported having treated a further quantity on account of miscellaneous small producers valued at $27 967 approximately. Messrs. C. J. & W. Reddie reported the recovery of 101·6 tonnes of ore from the *Shrimp* lease which was treated at the Shrimp battery and produced 5 tonnes of tin/copper concentrate of approximate value of $9 000. They further reported the production of 318·5 tonnes of ore from the *Sardine* lease of which 253·5 tonnes was treated at the Shrimp battery for an approximate value of $29 462. A quantity of 117·8 tonnes of ore still remains to be treated with an approximate concentrate value of $12 000. Shaft sinking and driving has been reported on both leases.

Clay

There has been no production from leases in this district during 1974.

General

It appears that some work and expense has been involved in developing, testing and assessing existing leases. A total of 129 mining leases and/or applications were in force at the end of the year while 16 claims were taken up during the year. There has been a reduction in the area of land in the district subject to authority to prospect.

P. M. FITZPATRICK, Warden.

INNISFAIL DISTRICT

The interest exhibited in gold on the Jordan goldfield in 1973 waned during 1974 and a number of lease applications were withdrawn. Work has been performed on a number of leases without any great financial reward.

Reports received of work performed on various leases and applications are as follows:—

Clay

M.L. No. 3 (J. and L. M. Brown, Kelly and Campagnolo).—Four men have been employed on the lease during the year. Brick clay produced totalled 180 tonnes.

Gold

M.L. 32—*Try Again and* 34—*Huh* (Slinko, Hanley, Withers and Marano).—One man has been engaged on these leases during the year performing general prospecting over the leased areas. The results obtained would indicate brighter prospects on the *Try Again* lease.

M.L. 35—*The Juliana* (C. MacDonald).—One man has been employed on the lease. An offer of sale was made during the year. The prospective purchasers cut costeens over the area with a bulldozer to verify the ground, but apart from distributing the existing workings, the costeens proved useless. A new offer has been received and sampling by the use of a back hoe has been carried out. Assay results are not yet to hand.

M.L. No. 37—*The Big Cat* (Smith and Wilson).—Two men have worked the lease during the year. Work is still proceeding removing the fall-in which occurred during the heavy wet season in 1973. A total of 500 to 600 tonnes of overburden has been removed for the production of about 2 tonnes of ore. The 2 tonnes of ore which was at grass in our last report was crushed for a return of 148·7 grams of gold.

M.L. No. 40—*Red Hill* (C. R. Mansfield).—The class of ore being worked on at present is poor. About 2 tonnes of mullock were raised for about 1 tonne of ore which was estimated to contain 5 to 6 dwts. One man has been employed on trenching, sampling and generally prospecting the line of lode. A small quantity of payable ore is available although little can be done until access is gained. Due to the treacherous nature of the ground through wet weather no sinking or driving has been carried out. Though the lode is quite large in places only a small portion of ore in one wall is payable.

M.L. No. 44—*Lady Elsie* (Van Woudenberg and Hoffman).—The lease has been worked by P. & D. Exploration Pty. Ltd., employing two men. Road work has been carried out to the workings and treatment plant, wilfers table, shaker screens and ramps, but has been delayed by wet weather. Approximately 711 tonnes of overburden has been removed. A trial sample of 8·18 kg of auriferous sands was forwarded for treatment, however this sample proved to be of no commercial value. Flour gold in the area worked was lost. Production has been further delayed by the incorrect installation of working plant. The pay seams are intermittent and the area has heavy overburden deposits in many places where the walls would indicate good gold bearing areas.

M.L. No. 66—*Paragon* (A. C. Hoffman).—Two men have been employed on the lease. Test holes drilled revealed four lode areas of cemented wash which carry approximately 5 dwts of gold per metre. During the year an access road to the lease, and also roads on the lease and two small settling dams, were constructed. A Warner concentrating plant was installed. However there proved to be insufficient water available with which to operate the machine efficiently. This plant has been dismantled and removed and a small alluvial plant is being installed.

M.L. No. 74—*Ellen* (Withers and Hanley).—Since the approval of the lease was obtained efforts have been made to obtain the necessary machinery to work the lease. No work has been performed on the lease as yet but a start could be made in early 1975.

A. C. NOLAN, Warden.

IPSWICH DISTRICT

During the year under review, the production of coal has been the principal operation in the Ipswich District.

Twenty-nine mines operated during the year for a total production of 2 379 966 tonnes.

To a lesser extent, dolomite, bentonite, and various clays were produced as shown.

Product	Tonnes	Men Employed	Value
			$
Dolomite	9 133	5	100 463
Bentonite	127	2	7 596
Clay	241 987	17	459 071

There are at present in the Ipswich District 187 current mining leases and applications, there being 23 applications received during the year and 18 applications rejected during the year. One hundred and forty-three permits to enter upon private land were issued during the year.

There was a total of 490 accidents reported in mines during the year. These accidents were classified as follows:—

No Time Lost	61
Under 14 days	301
Over 14 days	127
Fatal	1

Mechanisation of mines still remains a major feature in the Ipswich District.

B. R. HARRIS, Acting Warden.

LONGREACH DISTRICT

Nine leases were applied for on the Opalton field during 1974 but all nine leases were rejected by the Minister. Twenty-five claims were registered on this field during the year. Thirty-one miners rights were issued for the year. From *Mining lease No.* 12 (V. N. Evert) a report was received that specimen opal was obtained, valued at $2 000.

O. J. LUSCOMBE, Warden.

MACKAY DISTRICT

NEBO, EUNGELLA, ALLIGATOR CREEK AND MOUNT SPENCER

There was no production reported from these areas.

GRASSTREE

M.Ls. 318, 319, 320 *and* 327 (Grasstree—Zelma Syndicate).—Reported expenditure on these leases amounted to $23 616 including $6 295 for the purchase of machinery. Three men were employed on *Lease No.* 319 from which samples of low grade gold-bearing sulphide ore were sent to Mount Morgan for assay.

MOUNT FLORA

M.L. 207 (J. Smith).—A total of 10·12 tonnes of copper oxide ore was raised with an estimated content of 1–18 per cent. cu. Two men were employed and a Departmental quick winch was hired. No other production was reported.

MACKAY

M.L. 265 (Clabrick Pty. Ltd.).—Machinery valued at $19 000 was used to extract clay and shale. One man was employed and 7 930 tonnes of clay were raised. A total of 6 432 tonnes was treated for a return of 1 576 000 bricks.

M.L. 119 (A. R. Porter).—This lease was worked in conjunction with *M.L.* 265. One man was employed and 165 tonnes of shale were raised. A total of 163 tonnes was treated for a return of 40 000 bricks.

MISCELLANEOUS

During the year, 112 permits to enter private land were granted, 297 miner's rights were issued, 13 applications for land (claims), 4 applications for land (prospecting areas) and 9 mining lease applications were received. From these 5 claims were refused, 2 prospecting areas were refused and a total of 6 mining lease applications were refused, withdrawn or not proceeded with.

G. D. JOICE, Warden.

MAREEBA DISTRICT

The reported production for the year 1974 amounted to $1 403 609 as compared with the previous year's total of $1 585 497. The Company, R.B. Mining Pty. Ltd, commenced open-cutting of its wolfram deposits and was favoured with good sales value to record the production value of $512 250. There was a general down turn in mining activities with only 62 new applications being lodged in the year.

Gold

Anticipated production during 1974 did not eventuate, with very little activity in the search for gold. Mr. W. C. Gatenby and Party did carry out some developmental work on the *Minnie Moxham* mine (M.L. 2587) on the Hodgkinson goldfield. The work force varied from 1 to 3 and in the course of the year a new road was graded to the mine from the Tyrconnell mining access road. The mine collar was retimbered and pumping to de-water the mine continued for 3 months resulting in the water level being lowered to the 26 metres mark. Due to the heavy wet experienced in the early part of the year it appears that some of the old mines in the area are inter-locked in a water level system and further attempts to de-water the mine will be made in 1975. In the interim, investigations are proceeding for the establishment of a suitable treatment plant. Although the old Hodgkinson gold field is inactive, production wise, the old gold towns of Kingsborough, Northcote and Thornborough are being visited by the weekend prospector taking advantage of the rights conferred by his miner's right. Finance has hampered work being carried out on alluvial deposits in the Limestone and Fine Gold Creeks. Good alluvial samples have been recovered from this area.

Antimony

There was no reported production. Activity is almost nil, although W. R. Pillidge and Party have taken up the sight of the old Mitchell River antimony treatment plant and have carried out sampling and prospecting in the area.

Gemstones

As in the previous years approximately 700 gem seekers invaded the O'Brien's Creek area 20 miles north-west of Mount Surprise. Although the access road into the area is generally rough this does not perturb the gem hunters. A good water supply is available at Elizabeth Creek crossing, although the keen hunters prefer to live on the workings and cart their water.

The topaz won from the field are of various colours with the rarest and most valued being the yellow. Greens and various shades of blue have been discovered. Topaz are mostly white but of good cutting quality and it is not uncommon to unearth a topaz of 6 oz. As well as the topaz there is a quantity of aquamarine which is of good colour although its cutting quality is not as good as the topaz. The O'Briens Creek area comprises 57 sq. kilometres and is restricted to claim tenure only. There are approximately 40 claims in the area and the mining of the alluvial tin in the creeks help stir the creek beds and bring the gem stones to the surface.

Copper

There was no reported production and very little activity. The only work done was reported by Mr. A. C. D. Best current holder of the *Mount Molloy Copper Mines.* These leases are under option to Mareeba Mining and Exploration Pty. Ltd. Grid (200 m x 200 m) survey and surface mapping has been completed. Detailed petrographic and minerographic studies of rocks were carried out and old reports and plans re-assembled. A drill hole of 35·7 metres was completed by Carpentaria Exploration Company Limited on one of the Nychum leases.

Limestone

Six men were employed by J. V. and H. B. Graham in the *Crotty* lime works at Ootann. During the year a total of 3 654·6 tonnes of limestone was raised and processed at the works yielding 2 437 tonnes of burnt lime valued at $69 000. Messrs. A. Leoni and Party currently hold lime deposits in their *Fair Chance* and *Mareeba Lime Quarry* leases. There was no reported production although investigations were carried out in relation to working plant and machinery with a view to increasing production. Mr. Maurice William Marnane who has registered ground in the Chillagoe area is preparing to commence operations and in early 1975 should be producing burnt lime.

Wolfram, Molybdenite

Open-cutting of *Carbine Hill* commenced in September, 1974 with the Company, R. B. Mining Pty. Ltd. employing 38 men in all phases of mining operations. The 10 m x 5 m crushing rolls were replaced by 8 m x 1·6 m jaw crusher and the number of hammer mills were reduced to two. The Company commenced with its housing scheme and completed construction of 4 homes. Production of wolfram concentrates declined by 25·7 per cent. to 157·286 tonnes. During the year a total of 108 613 tonnes of mullock was raised together with 117 043 tonnes of wolfram ore with an estimated mineral content of 0·134 per cent. Treatment of ore and eluvial scree yielded 157·286 tonnes of concentrates. Although reported production was down 25·7 per cent. on last years' figures, the estimated value was up 35·7 per cent. to $512 250.

At Wolfram Camp, Mount Arthur Molybdenum N.L. employed 8 men on its *Dorrie Star* lease. A total of 1 100 tonnes of ore was treated yielding 21 tonnes of WO3 concentrates and 6 tonnes of MOS2 valued at $57 800. The Company exercised its option to purchase Metals Exploration No Liability's *Wolfram Camp* lease and at present the plant is being recommissioned for the treatment of eluvial wolframite deposits.

Tin (Lode)

Work continued on the *Tommy Burns* group of leases at Sunnymount. Gold Copper Exploration Limited employed 8 men in raising 2 000 tonnes of mullock and 3 000 tonnes of tin ore. All ore was treated in the Company's Prince Alfred Battery and yielded 58·15 tonnes of tin concentrates with an estimated value of $157 950. The mine was upgraded with new rails on the 100 m level with 0·3 metre gauge, for stoping of new ore bodies found on the north side of the 100 metres level and above.

PRINCE ALFRED BATTERY

Mine	Ore Treated	Yield	Value
	Tonnes	Tonnes	$
Tommy Burns and Tommy Burns Extended	3 060	58·15	157 950

Tin (Alluvial)

At Koorboora, R. N. Reddicliffe and Co. employed 7 men in alluvial operations of the *Koorboora Creek* leases. This mining party has purchased the Koorboora treatment plant from the liquidators of Overland Mining (Queensland), and have the plant working at full capacity. During the year 137 628 cubic metres of alluvial wash were raised and treated yielding 46·2 836 tonnes of tin concentrates valued at $153 041. Maintenance of dam and construction of haulage roads was carried out at a cost of $25 000. Treatment costs for production of concentrates are estimated at $75 000 and the value of the treatment plant is estimated at $85 000. Messrs. Manning and Walters did not operate their treatment plant at the Tate Tin Mines during 1974. Maintenance work was carried out on the plant with a view to commencing operations in 1975. Mr. George Smith has taken up a number of leases on Big Sandy Creek in the Mount Surprise area. Sampling was carried out through the year and 764 554 cubic metres of alluvial wash were proven and stacked for treatment. A Road Grant of $1 200 was made available for the establishment of a mining access road via the O'Brien's Creek gem area. An alluvial treatment plant to process 76·4 cubic metres per hour has been installed on the leases. Mr. Smith estimated that the known reserves will keep the plant operating for 8 years.

Six men were employed by Mareeba Mining & Exploration Pty. Ltd. on its *Tinaroo* leases in stacking and treating 2 292 cubic metres which yielded 1·12 tonnes of concentrates valued at $1 200. The Company had its alluvial leases in the Crystalbrook area worked under tribute by Mr. E. G. Fitzgerald. Five men were employed in operations and treatment of 76 455 cubic metres of alluvial wash yielded 33·6 tonnes of concentrates valued at $92 000.

SALES OF TIN CONCENTRATES PURCHASED BY ASSOCIATED TIN SMELTERS PTY. LTD. DURING THE YEAR 1974

Producer	Tonnes	Value
		$
T. Allan	3·294 9	10 000.50
Alminco Pty. Ltd. Kingsway Minerals N.L.	1·537 2	3 725.88
R. H. Camp	0·035 3	100.96
E. G. Fitzgerald	35·155 7	98 467.53
F. P. and D. Fitzgerald	13·120 0	42 012.44
W. J. Fitzgerald	0·172 7	710.95
Gold Copper Exploration Ltd.	39·687 0	102 345.14
H. Graham	10·279 3	35 457.06
J. W. Green and Son	1·095 7	3 779.34
Halpin Tin	15·612 9	55 972.98
W. H. Hodgson	0·212 4	717.80
Jack and Newell Pty. Ltd.	0·649 3	2 523.34
D. Keddie	0·300 7	1 157.79
C. Leroy	0·283 3	1 287.25
F. Little	0·107 3	382.71
Maric and Hilla	0·794 7	2 800.31
R. N. Reddicliffe and Co.	46·283 6	153 041.18
C. Roberts	0·560 0	2 109.53
R. S. Schiller	1·141 2	4 248.58
M. F. Fitzgerald	10·575 8	32 992.56
R. Hebenko	0·995 0	3 795.40
D. B. and K. F. Fitzgerald	7·506 0	26 711.67
D. Scott	0·045 6	132.25
Prince Alfred Mines	13·517 2	43 047.99
J. Butcher	0·102 4	304.39
P. Slay	0·071 2	292.30
P. Bethel	0·052 1	222.72
S. K. and D. Wessell	0·054 0	214.33
Mees and McGrath	2·556 2	9 751.45
Peters and Party	7·090 5	24 602.57
S. Fisher	0·231 4	714.58
J. J. Edmonds	0·542 2	1 917.64
W. Tumar and Rumble	0·089 4	284.75
A. D. Gallagher	0·678 1	1 942.55
I. Edwards	0·234 7	898.03
S. Krupica	0·057 1	238.97
S. N. Fisher	2·823 0	10 785.82
B. D. Gabbana	1·928 2	6 641.71
K. N. Lees	0·576 5	1 606.82
R. Lord	0·046 6	188.93
T. Lord	0·268 6	1 048.00
I. Williams	0·136 5	495.70
W. Withers	4·296 3	12 685.30
J. Power	0·208 0	721.28
A. McKinley	0·082 1	302.93
W. Batt	0·043 3	151.03
J. Breggs	0·038 1	144.44
De Burgh Exploration	0·217 6	781.36
M. Pasquina	0·147 9	533.85
P. Zabbia	0·221 5	832.38
B. Pohlman	0·030 1	98.55
Almaden State School	0·316 5	938.21
Portch and Boston	0·614 6	1 828.52
C. T. Lorne	0·053 1	178.03
L. Reddicliffe and Wootton	0·322 2	85.87
Total	226·802 8	708 954.13

SUMMARY OF REPORTED PRODUCTION FIGURES FOR THE YEAR ENDED, 31ST DECEMBER, 1974

Mineral	Yield	Value
	Tonnes	$
Limestone	2 437·0	69 000
Wolfram	178·3	564 250
Tin (lode)	58·2	157 950
Tin (alluvial)	187·1	606 609
Molybdenite	6·0	5 800
Total	..	1 403 609

H. T. SPICER, Warden.

MARYBOROUGH DISTRICT

Coal

As in recent years coal production in the Maryborough district has continued to fall. The producing mines in 1974 were the *Burgowan* mines *Nos.* 12 *and* 13. Production for the year totalled 64 689 tonnes with 42 559 tonnes coming from the *Burgowan No.* 12 mine and the balance of 22 130 tonnes from the *Burgowan No.* 13 mine.

Rutile, Zircon and Monazite

S.M.L. 84 (Queensland Titanium Mines Pty. Ltd.).—Production for the year consisted of the treatment of 5 230 515 tonnes of mined mineral sands, the metal content being 15 060 tonnes of rutile valued at $3 181 124, 10 883 tonnes of zircon valued at $2 023 367, and 27·35 tonnes of monazite valued at $3 420.

Clay

Clay production for the year totalled 24 461 tonnes valued at $30 947.

During the year 57 miners rights were issued and 41 mining lease applications were in force at the end of the year.

B. J. BUTLER, Warden.

MOUNT ISA DISTRICT

The value of minerals produced in this District during the year under review has been reported as $350 771 423. This is an increase of $87 354 202 over the figure for the previous year. Mount Isa Mines Limited accounted for $345 832 459 of the total.

The following information has been obtained from reports received from mining companies summarising their activities during the year:—

MOUNT ISA MINES LIMITED

	1973	1974
EXPLORATORY DRILLING—	Metres	Metres
Isa Mine—Underground	29 138	42 384
Isa Mine—Underground Misc.	3 774	2 036
Isa Mine—Surface	134	122
Other—Surface	708	2 172
Total	33 754	46 714
Hilton Mine	886	749
Total	34 640	47 673
DEVELOPMENT—	Metres	Metres
Exploratory and Main Development	107	46
Capital Development	1 713	2 501
Stope Development—Lead	8 734	10 539
Stope Development—Copper	30 742	33 018
Total	41 296	46 104
LONG HOLE PERCUSSION DRILLING—	Metres	Metres
Blasthole	1 090 679	1 154 648
Miscellaneous Percussion	16 546	12 502
Total	1 107 225	1 167 150
PRODUCTION—	Tonnes Ore	Tonnes Ore
Lead Sulphides	2 210 800	2 207 300
Lead Carbonates	32 200	44 700
Copper Sulphides	5 040 800	4 933 400
Total	7 283 800	7 185 400
EXPLOSIVE—	Kg	Kg
Kg per Tonne	0·50	0·51
Total Consumption ANFO	3 119 000	3 163 173
Total Consumption AN60	482 000	540 138
Total	3 601 000	3 703 311
TONNES PER MANSHIFT	15·2	14·5
FILL—	Cu. Metres	Cu. Metres
Wet Fill Placed	655 472	949 244
Dry Fill Placed	684 582	1 180 928
Kennedy Siltstone Placed	..	470 797
Total	1 340 054	2 600 969

EXPLORATION—SURFACE

Isa Mine.—There was no major surface exploratory activity during the year. The only drilling carried out was one hole of 122 metres drilled to firm up the design of the north-east corner of the Kennedy siltstone open-cut.

Hilton Mine.—No surface drilling was carried out during the year in the initial mining block. Drilling of a major deep exploratory hole at 7700N co-ordinate commenced with a rotary drilled collar, proposed to 1 100 metres. At the end of the year this collar was at 287 metres. The remainder of the collar plus a diamond drilled section will be completed during 1975.

There was little underground drilling activity as most of the year was spent developing towards underground drilling sites. A total of 280 metres of ground conditions drilling was completed in the P49 and J53 shaft area. The underground confirmatory drilling programme commenced in the last two weeks of the year. One hole of 182 metres was completed on 10 level by the end of the year.

Quartzite Area.—Diamond drilling continued at 37 400N co-ordinate and the hole was completed at 1 829 metres. At 47 200N co-ordinate diamond drilling commenced at 644 metres and the hole was completed at 1 612 metres. Overall drilling for the year was 1 887 metres. Both holes passed through the target zone in weakly pyritic shale without intersecting any significant lead-zinc or copper mineralisation.

Outside Leases.—Five shallow percussion holes totalling 112 metres were completed at the southern end of the Blockade orebody (*M.L.* 3894). This drilling was required to provide mining limits for a small tonnage of flux at that end of the deposit. A series of shallow percussion holes were completed at the Scheelite lease (*M.L.* 5750). This drilling totalling 173 metres confirmed the presence of a considerable tonnage of limestone flux on the lease. At Mount Norma a geochemical survey around the known mineralisation and of the surrounding leases was completed. Tenders have been called for a limited diamond drilling programme which will be completed early in 1975.

UNDERGROUND

A total of 42 384 metres of underground diamond drilling was completed during the year. This compares with 29 138 metres completed in 1973. Ore reserve drilling continued from the 13 level exploratory development for the southern extension of the 1 100 orebody. Drilling for the 3 000 orebody was carried out from both 17 level and 19 level.

Ore Reserve Drilling

3 000 *Orebody.*—Drilling on the 4 400N co-ordinate from 17 level was completed and gave an intersection of 20·4 metres of 2·2 per cent. Cu on the 24 level horizon. Drilling is in progress on the 9 000N co-ordinate on 19 level.

1 100 *Orebody.*—The drilling programme at 3 500S co-ordinate was completed during the year. Continuation of the footwall lens to this co-ordinate was confirmed with intersections of 57·3 metres at 3·9 per cent. at 18 level horizon, 57·6 metres at 3·0 per cent. Cu at 16 level horizon and 33·5 metres at 2·2 per cent. Cu at the 15D horizon. The size of the hanging wall lens has diminished considerably with the only significant intersection being 19·5 metres at 2·4 per cent. Cu below the 19 level horizon.

Confirmatory Drilling

The confirmatory drilling programme in the 1 100 orebody to 328S was completed. A major programme continued throughout the year in the *Racecourse* lead orebodies below 15 level.

Stope Drilling

In the 1 100 orebody an intensive drilling programme was carried out from 1 600N to 66S to define the complex irregularities of the greenstone basement. Drilling is continuing. Drilling was completed from 3 300N to 4 300N. Stope drilling in lead areas was concentrated in the areas of 11 orebody to 14 orebody 5 600N to 8 400N between 13 and 15 levels and 2 and 5 orebodies north of 8 400N. In addition drilling continued in the operating MICAF areas to provide grade and structural information for stope control.

Development

A total of 46 104 metres of development was completed during the year, 75 per cent. of this in the copper section of the mine. The No. 4 tipple and crushing system was commissioned in early 1974 following the completion of the ore pass development between 19 level and 21 level. Commissioning took place in the No. 1 system to allow lead to be hoisted through K57 shaft, following the installation of chain controls. Development preparation has commenced to connect the K57 and F58 shaft sinks. This will allow improvement to be made in the spillage cleaning of K57 shaft, and provide additional emergency water storage capacity. Aw84 upcast shaft extension from 15 level to 17 level was completed. U1S upcast shaft was completed to 11 level and from 13 level to 19B sub. This shaft is 7·62 metres in diameter except for the collar to 196·6 metres depth which is lined and has a 7·32 metre diameter. The section between 11 level and 13 level is in preparation for mining. The F10 downcast shaft has been reamed to 2·44 metres diameter by the 81R raiseborer from the surface to 13 level. The presink to 18·3 metres below the collar was completed and preparation is in progress for the initial benching and concreting to 7·32 metres diameter. No fill passes were developed from the surface. Conveyor installation and extension on 13C sub level continued in line with fill requirements in the 1 100 orebody.

A total of 33 018 metres was developed in copper areas. The majority of this development was in the 1 100 orebody (30 704 metres). Primary stope development was completed in 1 200N block and moved to 900N block which is now well advanced. Activity increased in the Zero to 500N block between 17 level and 19B sub level including commencement of an incline/decline connection. Development of the 3 300N to 3 700N block was almost completed, for extraction by slot

and mass fire. The small amount remaining will be completed when S32 stope filling is finished. Development for the 2 800N and 3 000N sub level caving was continued from 15C sub level to 17E sub level. Access development was completed down to 16 level. A footwall exploration drilling drive on 17 level for the 1 900 orebody was completed. Development of the T33 and T34 stopes was completed except for scavenging crosscuts between 14C sub level and 18E sub level. On 13 level, the hanging wall exploration drive for 1 100 orebody drilling was extended from 3 500S to 4 100S. On 17D sub level, the N10 south drive was extended 116 metres to 300S.

A total of 10 539 metres was developed in lead areas. The major development area was in 5 orebody, 13–15 level. Activity in modified MICAF, 13 level to 15 level, was commenced and became intense by the end of the year. The haulage development on 15 level is near completion. Development was completed for the 14 orebody MICAF south of K57. Development continued in 2 and 5 orebodies above 13 level with X83, X80, V80 and V82 stopes producing during the year. Exploration drives north of 8 400N continued on 13 level and 15 level.

Production—Lead Sulphides

Lead Sulphide production for the year was 2·21 million tonnes and was slightly less than last year's figure. Production was severely restricted in February when the railway line was flooded and stores were limited. Towards the end of the year the 15 level haulage was commissioned with diesel locos and 160 000 tonnes have been hauled on that level. The rest of the tonnage was hauled on 13 level.

PRODUCTION SOURCES

Source	1973	1974
	'000 Tonnes	'000 Tonnes
MICAF 13–11 level	998·8	1 081·5
2 Orebody above 13 level	344·7	474·0
5 Orebody above 13 level	480·6	510·8
5 Orebody below 13 level	55·3	..
7 Orebody Trial Stopes	158·5	39·1
Development	169·4	105·4
Total	2 207·3	2 210·8

Production—Copper Sulphides

A total of 4 933 000 tonnes of copper ore was produced, a decrease of 0·2 per cent. on the previous year. Major reasons for the decrease were power restrictions during the floods in periods 9 and 10, when production was halved, and an overtime ban imposed by fitters in periods 1 and 2.

Source	1973	1974
	'000 Tonnes	'000 Tonnes
650 Orebody Pillars	334·0	250·1
400 Orebody	179·2	308·4
1 100 Orebody—		
M and O17 Stopes	194·6	871·2
MO and S19 Stopes	896·8	560·9
MO and T22 Stopes	649·1	760·4
Q and U27 Stopes	934·2	483·2
R and T29 Stopes	201·3	..
O and M14 Stopes	..	680·8
S32 Stopes	407·1	0·9
T33 and 34 Stopes	..	78·8
U24 Stopes	485·2	165·1
1 100 Orebody Development ..	693·8	740·6
Other Development	65·5	33·0
Total	5 040·8	4 933·4

OPEN-CUTS

Kennedy Siltstone Open-cut (Rock Fill).—Production for the year totalled 1 102 500 tonnes of siltstone crushed with 1 807 000 tonnes of overburden removed. A major modification to the crusher feed system was completed in October. Development of 3 442 bench was commenced and production from 3 465 bench was completed. There are now two producing benches, and the production sequence runs from south to north. Equipment commissioned through the year consisted of a 50 tonne Cat 773 haulage truck, a 475 Michigan 9·2 cubic metre (12 cubic yard) loader, a P & H 1600 electric fan shovel, a 1360 Kg ALANFO mixer/charger, a Blowtorch 114 mm (4½") hydraulic drill rig, a Replacement ATD 3200 "air tracs", and a Cat D9 Dozer. A Gardner Denver GD120 310 mm (12¼") rotary blasthole drill rig was ordered as a replacement for the Blowtorch.

Black Star Open-cut.—A total of 42 667 tonnes of lead carbonate ore was mined.

MAJOR PROJECTS

Detailed designs were completed for the ON decline between 15 level and 19B sub level, the 6 500N and 7 400N declines between 13 level and 15 level for access to the Racecourse lead orebodies cut and fill stopes and the M68 stores handling and K70 workshop areas on 14 level. Designs were also completed for slurry explosive magazines on 15 level and 17 level, a layout for a mining museum in Mount Isa, and a spillage mucking connection between F58 and K57 shafts below 21 level.

Finite element stress analyses were used extensively in the selection of a mining method for Racecourse orebodies between 13 level and 15B sub level, in the 1 100 copper orebody stope and fill designs, and on the mining of No. 5/200 lead orebody above 11 level. Mathematical and physical model approaches were initiated in conjunction with the Mining Research Department on draw characteristics in sub level daving operations. Further tests were carried out on improved ground support and the leaving of pillars in wide orebodies to increase the safety of cut and fill operations at below 13 level. A study was carried out on the feasibility of using remote control on diesel units to improve ore recovery from open stopes.

Horadiam stoping was examined as a possible substitute for conventional sub level open stoping in future operations. A continuous check was kept on the quality of cemented rock fill being placed in the 1 100 copper orebody stopes and filling techniques were modified to improve the distribution of the fill components. Development was designed through cemented rock fill to assess the effectiveness of various mining techniques in this material. These openings will also be used to conduct property tests in the in situ fill.

MINE TRAINING

The Mining/Drilling Schools trained 87 miners and 75 drillers, and 1427 diesel operators were trained to licence standard. Job demonstrations were held throughout the mine as requested. Instructors demonstrated relevant safety and operating points to men. Standard work procedures were prepared or revised, a total of 95 now being available for use by mine operators and staff. Eighteen trainee shift-bosses were appointed to permanent staff after receiving basic training in the Mine Pre-supervisory Training Scheme. A series of training courses were conducted for supervisory staff, the objectives of the courses being to improve the utilisation of labour and to increase the efficiency of operating supervisors. Mine staff attended courses dealing with Industrial Relations, Accident Prevention, Communications, Human Relations, etc. All operating staff were given training in the use of breathing apparatus and artificial resuscitation. Persons required to use self-rescuers were trained in their use.

SAFETY

A total of 131 lost time injuries occurred during the year, one of which was fatal. There were 35 others which were serious and resulted in the loss of 14 days or more. The average severity over the year was 4 236 and the average frequency was 33·7. The most prevalent agents of injury were slipping and tripping, falling rock, airborne dust, persons falling from heights, flying objects and falling objects. A mucker received fatal injuries when a ST2B ran out of control down W71 decline on 15 level and crashed into the wall.

MILLING AND SMELTING OPERATIONS

No. 1 Concentrator.—A total of 101 007 tonnes of low grade chalcopyrite concentrates were retreated. Production commenced in period four 1974–75 and continued until the middle of period seven 1974–75. Retreatment then ceased and labour was reallocated to other concentrator areas. In addition to low grade concentrates retreatment, stockpiled smelter grade chalcopyrite concentrates and low grade lead concentrates were repulped during periods of concentrate shortage at either the copper or lead smelters.

A feed hopper and feeder conveyor system was completed allowing the feeding of concentrates into No. 3 rod mill for repulping or retreatment purposes. The system worked exceptionally well on relatively dry concentrates and feed rates up to 100 tonnes per hour were achieved, with blockage problems occurring on feed of high moisture content. For repulping, concentrates were fed to the No. 3 rod mill operating with a low media level. The repulped concentrate was then pumped to concentrate storage. For low grade concentrate retreatment the rod mill discharge material was fed to No. 4 ball mill in open circuit and then to flotation.

Flotation was conducted in the old "B" circuit flotation circuit with retreatment flotation of cleaner tailings and scavenger concentrates without regrinding. A number of variations on the above circuit were tried to improve performance, and major improvements in recovery and concentrate grade were achieved by increasing the cleaner and retreatment capacity by 100 per cent. for each by recommissioning available flotation banks. Reagents used were butyl xanthate, cyanide and Agent "G". No frother

was required for the treatment and less than normal air additions to the flotation cells was necessary to maintain control.

One restrictive injury of a high potential occurred, when one award person was caught by a fall of "frozen" grinding media storage hoppers.

No. 2 Concentrator.—A total of 2 208 124 tonnes of lead-zinc ore was milled during the year. Production rates varied from 95 319 tonnes per period to 195 258 tonnes per period, the former figure resulting from a planned production cut back to conserve coal while rail services were cut during the wet season. Milling rates of up to 340 t.p.h. were achieved during the year when soft free milling ores were treated.

Secondary screen gap size was reduced to 13 mm from a mixture of 19 mm and 13 mm to allow a slight increase in the maximum grinding rate and to improve metallurgical performance in the concentrator. The crushing rate per hour was consequently reduced by approximately 10 per cent.

Under the screen testing programme on primary screening a domite steel screen lasted in excess of 1 000 000 tonnes and thereby became one of the lower cost alternatives in terms of cost per tonne of ore crushed. Significant maintenance labour savings occurred during the trial period. A further Trelleborg rubber screen gave a service life in excess of 750 000 tonnes and an evaluation of this unit is under way.

Work commenced on the installation of an automatic sizing control system using a Foxboro 2/30 computer system and thyristor controlled variable speed pump drives for mill cycline feed pumps. Crushing screen size reductions allowed maximum milling rates of 85 t.p.h. per rod mill while treating the soft ores from the No. 5 orebody.

Metallurgical performance again varied widely with variances in the proportion of *Black Star* orebodies treated. Ores from V80, V82 and Y76 Stopes, No. 5 orebody were characterised by free floating pyrite which diluted both lead and zinc concentrates. High milling rates were utilised at times to minimise the liberation of this pyrite and to increase lead concentrate grades at the expense of recovery. Ore from X83 Stope, No. 2 orebody was similar to the X80, X82 stope ores treated in previous years and in general caused no problems with regard to concentrate grades. However, when treated in combination with the 5 orebody materials the dilution of concentrates with pyrite became a problem. The use of lime as a pH regulator continued during the treatment of No. 5 orebody materials. Bayer Agent "G" was used as a replacement for H.E.C. for the depression of pyrite in lead cleaning when supplies of H.E.C. ran out.

A third filter was successfully installed and commissioned during the year and this has allowed maintenance of the previous units to proceed without interrupting production. Extension of the existing zinc concentrate storage pad area was commenced.

There were four lost time accidents, two at No. 2 Concentrator and two in the mill relining gang.

No. 3 Concentrator.—A total of 192 026 tonnes of converter slag was milled.

Following the commissioning of the Gyradisc crusher at the Trackhopper in March, 1974 and the use of forged steel balls in the mill, capacity tests were conducted and the treatment rate raised from 20 tonnes per hour to 30 tonnes per hour. Currently plans are underway to increase the installed kilowatts on the cyclone feed pumps to allow either an increase in throughput or fineness of grind.

Scavenger concentrate and cleaner tailings were transferred from cyclone feed to rougher feed, to assist in increasing the capacity of the ball mill and cyclone feed pump system to obtain a finer primary grind. A plant trial with Teric 402 water soluble frother was abandoned when the test in No. 4 Concentrator was unsuccessful. A general deterioration in tailings losses occurred from approximately March, 1974 and investigations have indicated two main sources responsible for the difficulties. These were an increased cooling rate of the slag and therefore a finer grain size of white metal and a deterioration in the fineness of grind. Subsequently investigations into ways of improving the grind were conducted.

One lost time accident of a low potential occurred during the year.

No. 4 Concentrator.—A total of 4 949 215 tonnes of chalcopyrite ore was milled. Treatment rate was normally 700–780 tonnes per hour dependent upon ore hardness and crushing plant product sizing and ore availability. Throughput was markedly affected in periods 9 and 10 1973–74 by planned tonnage reductions for power conservation resulting from coal shortages due to floods.

Crushing plant performance improved throughout the year with respect to throughput rate and availability due to longer periods made available for planned maintenance and changes to components in crushers and screencloths.

Plant trials of replacements for M.I.B.C. frother were conducted. I.C.I. Teric 402 was large-scale tested in the plant and was found unsuccessful due to poor froth control and a build up in circuit water causing excessive frothing. A limited roughing test of Aerofrother 65 showed similar characteristics to the Teric 402 and was rejected. A limited roughing test of T.E.B. showed some promise by improving zinc rejection and at lower consumption rates than M.I.B.C. A large-scale plant test is planned in early 1975. The installation of two additional flotation banks for use as maintenance replacement units commenced late in the year.

Lead Smelter.—Production of crude lead was 119 950 tonnes containing 278 584 kg of silver. Dross production was 3 025 tonnes. Plant production was severly restricted due to environmental control shutdowns which accounted for 8·65 per cent. of total available time on the sinter plant. High sulphur concentrate also contributed to reduced sinter plant treatment rates during the first three quarters of the year.

Plant shutdowns for various reasons totalled 83·22 days for the sinter plant, and 67·44 days for the blast furnace. In addition, the blast furnace operated on reduced blast for 41·30 days due to sinter shortages caused by environmental control.

New sulphur and coke bays were installed and the clay mill relocated to relieve congestion in the furnace aisle. A new procedure for controlling gas handling during furnace run-downs resulted in improved hygiene. Development of a new design of trigger scissors for operation totally by crane has eliminated a hazardous job from the crane chaser's duties. Ten lost time accidents were recorded at the blast furnace section. Three of these resulted in prolonged absence. A new "Lock Out" procedure was introduced into safety procedures to provide a more positive protection of personnel working on equipment with a high potential for serious injury. Filter plant control room environment was improved by use of floor grids, air curtain, and hydrofiltered air supply. The steel cleaning gang of 4 operators and a leading hand commenced operation again in June, and concentrated on safety items such as handrails, walkways and kickplates. Notable improvements were made to hydrofilters with 4·51 being fitted with a sand blasted and epoxy coated body, and a circular stainless steel duct, 4·43 with a circular duct and 4·57 with an irrigated duct. Lead in air sampling was commenced by Industrial Hygiene to determine areas requiring immediate attention for repair and maintenance. These results will complement a specific survey conducted to highlight areas requiring attention based on subjective assessment. Remedial action will be taken based on these results. An electric hoist was purchased for raising of the 307A magnet. Machinery Department approval has been sought for modifications to the support to enable its installation. Hygiene and safety condition at the baghouse improved with the installation and commissioning of the new shaking and pulping system. A total of 12 lost time accidents were recorded, of which four resulted in prolonged absence.

The shortage of standard filter cloth material A5009 has resulted in a programme of testing alternate materials.

To date Nycloth No. 3 and EH Brett No. 45 have been proved as satisfactory replacements for A5009. Extensive repairs have been carried out on all vacuum pumps and the vacuum system. Both Stockdale drum filters required considerable repairs and are approaching the end of their economical life. Replacements are planned during 1975. Stainless steel ferrules are now standard on both disc filters and have proved an economic replacement for mild steel. Some problems were experienced early in the year with wet fluxes and subsequent blocked chutes caused by heavy rain. Considerable problems were experienced with the 113 vibrating conveyor from excessive vibration to buildings and control instruments and hygiene conditions resulting from leaks to pan seals and discharge seals. Investigations are underway to eliminate the problem either by redesign or replacements. Modifications to seals have not been successful to date. No. 103 elevator was rebuilt with new belts and buckets, but an extra steel strip placed in the buckets had to be removed to reduce excessive spillage. The moisture control system was fitted with an electronic control circuit which performed satisfactorily.

Stocks of grate bars have run very low, and grate bar replacement has been subsequently curtailed. Orders for replacement stocks have been placed, and will start arriving in February, 1975. An investigation of grate bar wear was conducted and an alternate material will be tested in 1975. Reversal of pallets has commenced to improve the seating of grate bars in the pallets. The use of pallet rapper has been discontinued till worn grate bars are replaced.

Significant improvements to hygiene resulted after commissioning the new drossing machine and new design dross removal scoop. Both units showed a marked reduction in maintenance requirements and contributed to better metallurgical performance. One 100 tonne kettle was replaced after seven years' service. Control of the drossing operation was improved by the installation of maxi scales for automatic cut-off of dross kettle burners at present temperatures.

Copper Smelter.—Blister production increased to a high 161 040 tonnes after deduction of 1 545 tonnes blister in recycled CRL slag. A total of 47 320 tonnes of purchased ores were smelted including 34 160 tonnes of low grade silica flux.

Environmental control shutdowns totalled 938.15 hours. Blister copper was stockpiled during the interruption to rail transport at the beginning of the year and was eventually eliminated by October when 7 052 tonnes was despatched.

Condition of the H.V. flues deteriorated throughout the year. All expansion joints have suffered stress corrosion cracking and were wrapped with aluminised paper and asbestos to give some sealing against air in leakages. Several bends were replaced in stainless steel. The east flue was cleaned out and the larger perforations patched. Air leakage into the flues has increased to the stage where it is limiting the capacity of the plant. Problems were experienced with I.D. fans throughout the year. Motor commutation problems and resulting speed limitations were the main restriction on capacity of the FSR system. One variable speed motor burnt out on two occasions and a substitute fixed-speed motor was installed with damper control for draught regulation. Dust buildup in these units continued to require regular shutdowns for cleaning. The under-capacity of the existing precipitator caused increased dust losses at the higher production rates achieved during the year. The Fuller–Kinyon pumps caused some dust handling problems early in the year but these were overcome by regular cleanout of the pumps to remove sinter lumps. Feeding of dust to the pumps was improved by providing both east and west end drives on the leaching screw.

Both furnaces operated throughout the year. No. 1 furnace has now been in operation for 4·2 years, No. 2 for 1·9 years. Hearth conditions in both furnaces have been stable with only minor amounts of converter slag returned to the furnaces. Wear on the bathline copper jackets in both furnaces necessitated a programme of gradual replacement of jackets. Uptake accretions have been the major operating problem. Some success has been achieved by use of oil burners to smelt out No. 1 furnace uptakes. Copper floor slabs were installed in No. 2 furnace uptakes and doors fitted to the sidewalk. This allows more frequent cleaning and avoids long shutdowns for removal of accretions. A trial of silican carbide matte launders showed that a reduction in matte tapping labour could be achieved by the development of such a system. Wear on the I.D. fan runner of No. 1 furnace necessitated replacement of the runner at the end of the year. No. 2 furnace was off line for five days to enable repairs to be made to the 513 calcine conveyor feeding it. The first failure of a copper calcine gun tip occurred after 17 months of operation. A total of 583 813 tonnes of calcine was smelted for the year, 74·5 per cent in No. 1 furnace. Thermal efficiency of the combined furnace operation was unsatisfactory at 4·24 GJ/tonne calcine. Severe deterioration occurred in thermal efficiency during the wet season due to wet coal. Copper loss in reverberatory slag was good at 5·09 kg/tonne of blister.

Two converter operation was maintained throughout the year and eleven campaigns were completed. Matte grade averaged 41·0 per cent. Cu but a fall to 39–40 per cent. was caused by reduced FSR air capacity at the close of the year. Converter performance was excellent with a blowing rate of 4·73 mins/tonne of blister and a stack time of 76·3 per cent. Matte shortages were far fewer than the previous year due to improved reliability of the FSR system. Converter output averaged 251·6 tonnes/converter day. Refractory life varied from 9 290 to 23 075 tonnes blister per campaign with the best performance of 23 075 tonnes from No. 3 converter on a Radex CM tuyere line. Matte and slag ladles were changed over to 7 cubic metres size at the start of the year and have simplified aisle transfer operations. A second 12 000 kg forklift was put into service to overcome outages of the existing unit.

There were seven lost time accidents for 1974. One in the furnace section, five in the converter section and one in the FSR system. A record of 235 908 hours free of lost time injury was attained in September.

EMPLOYMENT

The average number of persons employed by the company during the year was 5 681. In addition to this, there was an average of 169 contractors.

VALUE OF PLANT

The value of plant and machinery owned by the company was $356 533 285. Of this, plant valued at $24 458 168 was installed during 1974.

GUNPOWDER COPPER LIMITED

Underground development was continued at the *Mammoth Mine* with the access decline extended to 262 metres below portal level. Production and development were seriously affected by floods and fuel shortages during the early part of 1974.

Other particulars reported on the mining activities at *Mammoth* are as follows:—

Underground Diamond Drilling ..	5 970 metres
Horizontal and Decline	3 157 metres
Raises	408 metres
	3 565 metres
Long Hole Percussion Drilling—	
Stoping	54 607 metres
Production—	
Sill Stripping	34 311 tonnes
Stoping	143 996 tonnes
Development	105 760 tonnes
	284 067 tonnes
Explosives—	
Gelignite	110·4 tonnes
Anfo	165·0 tonnes
	275·4 tonnes
Explosives/Tonne of Ore Mined ..	1·03 Kg/t
Milling—	
Ore Treated (Mammoth Chalcocite)	281 114 dry tonnes
Average Head Grade	2·64 % Cu
Copper in Ore	7 421·4 tonnes
Concentrate Produced	20 706 dry tonnes
Average Grade of Concentrate ..	29·65 % Cu
Copper in Concentrate	6 139·8 tonnes
Average Recovery	82·73 %
Recoverable Copper	5 909·6 tonnes
Value of Recoverable Copper ..	$5 759 500
Concentrate Railed to Townsville ..	21 192·3 dry tonnes
Power Generation	15 311 M.W.H.
Employment—	
Employees	219
Contractors	49

Further exploration work was carried out during the year. On authorities to prospect 1 367M and 1 368M anomalies delineated by the 1973 geochemical and airborne geophysical programmes were followed up on the ground. The anomalous areas were evaluated by the use of detailed geological and geochemical surveys. Coverage by detailed geological mapping of the Mammoth group of mining leases was extended east of the mine area. A diamond drilling programme resulted in 6 582 metres of coring in 16 holes. The holes were drilled to test extensions of known mineralisation and also exploration targets within the vicinity of the mine. The area covered by the Mount Oxide leases has been covered by detailed geological mapping and soil sampling surveys.

A total of 2 745 metres of diamond drilling was completed in 8 holes. This programme was designed to evaluate the Mount Oxide copper deposit and its possible extensions.

QUEENSLAND PHOSPHATE LIMITED

This Company is the holder of special mining lease *No.* 7830 covering an area of 13 500 hectares. During the year 2 343 metres of rotary percussion drilling in 66 holes was carried out. Other work included 119·88 metres of diamond drilling and 189·62 metres of percussion precollaring in 6 drill holes. Thirty tonnes of phosphate rock were dispatched for metallurgical testing. Removal of overburden and construction of a crushing, washing, and screening plant was commenced.

The Company is the holder of authority to prospect *No.* 903*M* and has supplied the following information on work done. This information applies also, in part, to authorities to prospect *Nos.* 972*M to* 980*M* inclusive and 1 139*M* which cover the same areas as the various parts of 903*M*:—

Area No. 1 (Duchess).—Field work at Duchess included diamond drilling, rotary percussion drilling, excavating into rock phosphate, carting of rock phosphate and preliminary work prior to the commencement of mining. Eight diamond drill holes were completed for totals of 174·36 metres of coring and 227·97 metres of non-coring rotary-percussion precollaring drilling. During 1974 a total of 503 non-coring holes were drilled for an aggregate of 14 998 metres of rotary-percussion drilling.

Twelve separate excavations were commenced during the year to expose phosphatic beds for geological investigations. One excavation was also utilized as a trial mining exercise and 5 790 tonnes of rock phosphate from it were stockpiled and another excavation was suspended after removal of overburden. In the two latter excavations, which were of a significant size, a total of 114 000 tonnes of waste was

removed. Rock phosphate removed from trial excavations was transported to Mount Isa for treatment in a custom crushing and screening plant prior to shipment to potential overseas customers. A total of 1 500 cubic metres was crushed and screened to produce classified products in two size ranges of which 1 000 tonnes were shipped to Japan. In addition 550 tonnes of phosphate rock "as mined" was transported to Wallaroo S.A. for plant scale testing for the manufacture of superphosphate. Following the decision being made to commence mining rock phosphate in 1975, and as a preliminary to the proposed mining, removal of overburden from phosphate rock was commenced towards the end of 1974. At the close of the year 394 066 cubic metres of waste had been excavated. Necessary work preliminary to the commencement of mining was commenced during the year. This included the planning and surveying of a proposed railway route from the deposit to Bungalien, the surveying of haul roads, investigations of a proposed town site, evaluation of groundwater resources for domestic and process water, investigation of surface water storages and construction of a crushing, washing and screening plant. *M.L.A.* 7 830 covering the Duchess phosphate deposits was granted from 1st November, 1974.

Area No. 2 (Ardmore).—During 1974 field work at Ardmore included rotary-percussion drilling and excavating into rock phosphate. A total of 3 965 metres rotary-percussion drilling was completed in 275 drill holes. Six excavations into rock phosphate were completed during 1974 to expose the phosphatic beds for geological investigation.

Area Nos. 3 *to* 8 (Mount Jennifer, Phantom Hills, Highland Plains, Mount O'Connor, Babbling Brooke Hill and Riversleigh).—No field work was carried out in these areas during 1974.

Area No. 9 (Lady Annie–Lady Jane).—Field work at Lady Annie–Lady Jane included diamond drilling, rotary-percussion drilling, geophysical testing, excavating into rock phosphate, carting rock phosphate, and operating the pilot flotation plant. A total of 2 554·30 metres of diamond core drilling was completed in 11 holes during 1974. In addition 151·70 metres of rotary-percussion non-coring pre-collaring drilling was completed on these holes. A total of 3 195·35 metres of rotary-percussion non-coring drilling was completed in 113 holes. Geophysical testing was confined to the use of induced polarization and gravity techniques. A total of 115·5 line-km of I.P. surveying was completed during 1974. The surveying, in general, was conducted using 100 metre dipole spacings on traverses at 500 metre spacings regionally and at 250 metres locally as follow up. A total of 28·15 line-km of gravity surveying was completed at 25 metre station spacings on 250 metre line spacings. Two excavations were completed, one each at Lady Annie and Lady Jane. These were designed to provide rock phosphate for use in the pilot flotation plant. A total of approximately 10 000 tonnes of rock phosphate was excavated and stockpiled at the excavation site. During 1974 approximately 14 500 tonnes of rock phosphate were carted from excavation stockpiles to the pilot flotation plant stockpile to be used as plant feed. Approximately 1 550 tonnes of rock phosphate concentrate produced in the pilot flotation plant were trucked to the Mount Isa rail head. These trial shipments were for despatch to overseas consumers. During the year 14 223 tonnes of phosphate rock from various excavations in the Lady Annie phosphate deposits were treated in the pilot beneficiation plant. The pilot plant closed on 20th December and will reopen on 23rd January, 1975. It is expected to continue operation until mid 1975.

During 1974 an average of 14 people were employed in geological activities. Also 16 men were employed in operation of the Lady Annie pilot beneficiation plant and 3 men were employed in excavating, surveying and related activities. At Phosphate Hill approximately 15 contractor's personnel were engaged in excavation and 3 personnel in surveying and related activities. Diamond drilling was undertaken at Lady Annie–Lady Jane and Duchess while rotary-percussion drilling was undertaken at Duchess, Ardmore and Lady Annie–Lady Jane.

PLACER PROSPECTING (AUSTRALIA) PTY. LTD.

Lady Annie–Lady Loretta Leases (116 km N.N.W. of Mount Isa).—A diamond drilling programme was conducted to further define the extent of the *Lady Loretta* mineralization. Detailed (1:1 000) geological mapping together with geochemical outcrop sampling over the area complemented the drilling data and enhanced our knowledge of the *Lady Loretta* geology. Three downhole geophysical techniques were employed towards the end of the year. Gamma-logging was used for stratigraphic correlation purposes, induced polarization for empirical measurement of I.P. effect and resistivity through fresh rock, and thermistor-logging for determination of thermal gradient anomalies which could indicate oxidising sulfides.

Authority to Prospect 1 171*M*.—Exploration of *A. to P.* 1 171*M* consisted of geological mapping, geochemical soil and outcrop sampling, and an aeromagnetic/scintillometer survey. Geological mapping (1:12 000 air-photo scale) was undertaken to establish the regional setting of mineral occurrences. More detailed mapping (1:5 000 scale) was used to resolve complex structures. The detailed soil and outcrop sampling was a follow-up to the regional soil geochemical programme and concentrated on geologically favourable and geochemically anomalous areas. The aeromagnetic/scintillometer survey of 145 linemiles was flown over the northern half of the Authority to Prospect, the southern half having been flown in a previous year.

During the year an average of 10 people were employed.

UNION MINIERE DEVELOPMENT AND MINING CORPORATION LTD.

During the year interests in 180 leases in the area 96 kilometres N.N.W. of Mount Isa, were held in joint venture with Eastern Copper Mines N.L. as well as in the authority to prospect *No.* 1 058*M* held by Eastern Copper Mines N.L., 64 kilometres N.W. of Mount Isa. In addition numerous mining tenements were inspected during the year as part of a regional exploration programme.

On the 180 leases exploration work included geological mapping at scales of 1:12 000 and 1:2 400, detailed rock chip and soil sampling, an induced polarisation survey, a small amount of costeaning and a major diamond and percussion drilling programme. Diamond drilling of 7 holes totalling 2 337·5 metres and percussion drilling of 16 holes totalling 1 418·3 metres was carried out. In addition the company's research geologist conducted an extensive trace element geochemical investigation on surface samples and drill core. An average of 3 geologists, 3 field assistants and 3 drillers were employed during the year. Further significant indications of mineralisation were obtained in several of these leases. However, results of work on 82 leases indicated no potential and these leases were surrendered before 31–12–74. On the authority to prospect *No.* 1 058*M* exploration work involved detailed geological mapping at a scale 1:12 000, extensive sampling, reconnaissance geological mapping, stream sediment sampling and drilling. A total of 283·5 metres of diamond drilling was done. No significant mineralisation was intersected and the agreement was terminated.

EASTERN COPPER MINES N.L.

The Company has advised that exploration work was carried out at its areas near Mount Kelly by Union Miniere Development and Mining Corporation Ltd. and on the *Jasmine* leases by Dowa Mining Company. All such exploration was financed and managed by the joint venture partner. Drilling carried out during the year included 283 metres of diamond drill coring in authority to prospect *No.* 1 058*M*. Copper mineralisation was encountered only in minor amounts. During the year an average of four men were employed.

AGIP NUCLEARE AUSTRALIA PTY. LTD.

During the year 1974, exploration activities were carried out over two authorities to prospect and 27 mineral leases. No mining operations were carried out, as the evaluation of results are still in progress. The exploration was mainly carried out for uranium.

Authority to Prospect 1 234*M*.—The exploration activities include detailed heli-borne scintillometer survey, ground follow up of air-borne radiometric anomalies, detailed photogeological interpretation, interpretation of ERTS immagery satellite photographs for structural elements study, and detailed geological and ground radiometric mapping on scale 1:1 000 of anomalous radioactive areas. A total of 51·20 line kms. of surface radiometric gridding and a total of 123 hectares were geologically mapped. Petrological—mineralogical study of 16 rock specimens was completed. A total of 86 samples were assayed for U_3O_8 and ThO_2. A total of 510 metres of shallow percussion drilling was done to a depth varying from 3 metres to 6 metres for geochemical soil sampling and bedrock chips over two anomalous areas with semi-quantitative spectroscopic analysis of 45 mineralised and unmineralised rocks for geo-chemical studies. A total of approximately 50 kms of road construction was completed.

Authority to Prospect 1 284*M*.—The prospecting and exploration work consisted mainly of examining and evaluating previously known uranium occurrences as well as many air-borne radiometric anomalies resulting from air-borne surveys of B.M.R. and Carpentaria Exploration Company. A detailed heli-borne spectrometer survey was carried out using an Austral IGS–4 spectrometer mounted in a Bell–47 Alpine Helicopter. An experimental electrical resistivity survey was done over leases located within the Authority to Prospect. A total of 16 uranium occurrences from the previously known 25 airborne radioactive anomalies and uranium occurrences were investigated. Six of these occurrences were geologically and radiometrically mapped, including the topographic survey of four areas. A total of 61 line kms. of radiometric gridding was completed. A total of 194 hectares of detailed geological mapping on scale 1:1 000 was completed. One of

these anomalies is held as *mineral leases* 7 740, 7 741, *and* 7 742 and the other two anomalies as *mineral lease applications* 7 850, 7 851 *and* 7 861. Petrological and minerological examination of 62 rock specimens from Eastern Creek volcanics within mining lease and mining lease application areas and authority to prospect areas were carried out. A total of 108 samples were assayed for U_3O_8 and ThO_2. Geological and structural photo-interpretation using Commonwealth photographs were completed. Access roads were made and grading of existing tracks was carried out. A total of 57 kilometres of road construction was completed.

Mineral Leases.—A total of 27 mineral leases and mineral lease applications were investigated in detail. The exploration activities within these areas included detailed geological mapping and surface radiometric gridding on scale 1:1 000. A top survey consisted of, laying grid lines and preparation of contour plans at one metre contour intervals, shallow percussion drilling using a Gardner-Denver air-track, and diamond drilling. Petrological and mineralogical studies were made of stuie of rocks, and assaying of samples both from surface and drill cores and dusts was carried out. A total of 10·94 square kilometres of topographic surveying, 9·16 square kilometres of geological mapping (scale 1:1 000), 297·39 line kilometres of ground radiometric surveying was completed. Also completed were 145 percussion holes totalling 1 902 metres, 46 diamond drill holes totalling 4 667·27 metres, examination of 197 thin sections for petrological and mineralogical studies and assaying of 1 219 samples for uranium oxide and other elements.

Thirteen persons were continuously employed during the year.

SAVAGE EXPLORATION PTY. LTD.

Exploratory activities of this Company during 1974 were confined to areas covered by 3 authorities to prospect, 10 mining leases and 10 mining lease applications.

Authority to Prospect 1191*M.*—Immediately following the wet season, a track etch programme was carried out in an area near the *Valhalla* group of leases (*M.L. Nos.* 6 035, 6 036 *and* 5 907). An area of 810 hectares was gridded. This involved 30·8 kilometres of line survey at a grid interval of 200 metres. A radiometric survey was then carried out using McPhar TV1 scintillometers. A total of 150 locations at a grid interval of 200 metres were drilled to a depth of 0·76 metre and track etch cups were placed in these holes and exposed to alpha particles over a period of thirty days. The cups exposed thus were processed by Terradex Corporation, California, U.S.A. Results obtained indicate four anomalous areas of radon concentration. Mining lease applications covering these anomalous areas have been lodged. A total of 150 soil samples were collected and analysed for elements genetically associated with uranium. The entire area covered by the A. *to* P. was traversed using McPhar TV1 scintillometers. A number of mining leases have been or are being applied for to cover the more promising areas. The area covered by the A. *to* P. was reduced to 40 sub-blocks during the year.

Authority to Prospect 1 193*M.*—Geological and scintillometer traverses were carried out in the entire area covered by the A. *to* P. Detailed petrographic examinations, sepectrometric assays and chemical analyses of selected samples from promising areas were also carried out. Four promising uraniferous areas were delineated and mining lease applications have been lodged to cover these areas. The total area covered by the A. *to* P. was surrendered in March, 1974.

Authority to Prospect 1 194*M.*—A track etch programme involving an area of approximately 49 hectares was carried out in the same manner as set out under *Authority to Prospect* 1 191*M.* Results received from U.S.A. indicate two outstanding anomalous areas. It is proposed to drill these areas in 1975. Closely spaced geological and radiometric traverses were carried out in the area covered by the A. *to* P. Four anomalous areas of interest were delineated and these are being evaluated in detail. Detailed petrographic examinations, spectrometre assaying and chemical analysis of selected samples were also carried out in the more interesting areas. The total area covered by the A. *to* P. was surrendered to the Department of Mines, Brisbane, in March, 1974.

The entire field work in all the three authorities was carried out by two geologists and two trained field assistants stationed at Mount Isa. The services of a surveyor were also provided to the field parties as requested.

Savage 3—*M.L.* 7752.—Initial radiometric surveys to delineate the anomalous areas have indicated patches of anomalous area extending in a N.S. direction for approximately 603 metres. Anomalous areas occur on and along the western side of a quartz vein possibly representing a faulted zone. At this stage it is considered that the anomalous areas are controlled by the fault.

Savage 4—*M.L.* 7753.—Radiometric surveys have revealed two major anomalous areas of higher intensity separated by a series of patches of lower intensity. The entire strike length of the anomalous area is estimated to be just under 804 metres. Calcareous hematite quartzites are the host rocks on the area. Selective sampling of anomalous areas has indicated grades of up to 3·6 lb/ton U_3O_8 on XRF analysis.

Savage 5—*M.L.* 7754.—One major anomalous area of high intensity grading into one of lower intensity and extending over a strike length of 804 metres was revealed during the radiometric surveys. From geological considerations it is assumed that this anomalous area is an extension of the rich Big Dip/Depression deposit that adjoins this lease to the south. However, grab samples from anomalous areas have indicated the presence of 320 ppm and 920 ppm of Thorium on XRF analysis.

Savage 6—*M.L.* 7755.—One major anomalous area trending N.S. with coatings of carnotite in quartzites was located by ground scintillometer surveys. The anomalous area extends over 603 metres along the strike. XRF analysis of selected samples indicated grades of 6·6 lb/ton in the richer zones of the anomalous area.

Savage 7—*M.L.* 7773.—Radiometric surveys have indicated the presence of two major anomalous areas converging towards each other. The eastern anomalous zone trends N.W.—S.E. and the western area N.S. Selective sampling from locations of high radioactivity in the eastern area (within greywacke) indicates grades of 7·3 lb/ton on XRF analysis. The western area of XRF analysis has indicated lower grades of 1·9, 1·8 and 1·3 lb/ton U_3O_8. Higher than normal thorium contents were also noted in the assays.

Savage 8—*M.L.* 7776.—Series of anomalous areas trending N.S. and located in the greywacke and basalts were defined by initial radiometric surveys. The area was gridded using McPhar TV1 scintillometers at a grid interval of 50 metres. Following this a track etch programme was carried out. This has revealed the presence of an area of high radon concentration in the greywacke. Surface samples collected from the greywacke have indicated grades up to 4·2 lb/ton U_3O_8 on XRF analysis.

Savage 9—*M.L.* 7777.—One major anomalous area extending over 24 chains along the strike was revealed during ground radiometric traverses of this area. The area was later gridded at intervals of 50 metres with McPhar TV1 scintillometers. Following this a track etch programme was carried out. The programme has revealed the presence of an area of high radon concentration in the southern part of the lease. Surface samples collected from this area indicate 0·18, 0·32 and 0·07 per cent. U_3O_8 on XRF analysis.

Savage 11—*M.L.* 7803.—Initial radiometric surveys with McPhar TV1 scintillometers have indicated the presence of an anomalous area approximately 141 metres in length. A programme of geological mapping, radiometric gridding, sampling, costeaning, etc., has been proposed for this area.

Savage 15—*M.L.* 7817.—Two anomalous areas differing in intensity and strike were delineated by scintillometer surveys. The anomalous area towards the southern part of the lease is of a higher intensity and strikes N30°E. Uraninite is the radioactive mineral and the host rocks are basalts and quartzite. A fault is considered as being responsible for the displacement of the mineralised zone.

Savage 16—*M.L.* 7818.—This lease adjoins *M.L.* 7817 towards the south. Radiometric surveys have revealed the presence of a comparatively smaller anomalous area than in *M.L.* 7817. The host rocks, attitude and characteristics of this anomaly are the same as that in *M.L.* 7817.

Field work in all the leases was carried out by two geologists and two field assistants stationed at Mount Isa. The services of a surveyor were also provided to the field parties where required.

NORTH BROKEN HILL LIMITED

North Broken Hill Limited held a number of mining leases and mining lease applications in the Yappo-Galah Creek areas during 1974. No authorities to prospect were held by the Company in the Mount Isa area. *Lease Nos.* 6621 *to* 6631 *and* 6633 *to* 6636 were the subject of a joint venture agreement with Pegmin Limited. *Lease Nos.* 5712 *to* 5716, held by Pegmin Limited also formed part of the joint venture, under the terms of which North Broken Hill Limited was the operating company. No mining operations were carried out on the tenements during 1974 but a total of 913·79 metres of diamond drilling was completed. Three men were employed from 18th February, 1974, to 31st June, 1974 (about 55 man-weeks) on drilling and two geologists were employed in the field for one man-week in logging drill holes. Total expenditure on exploration activities in the Mount Isa area during the year was $30 429.

PEGMIN LIMITED

Drilling was carried out at the Mount Annabel Mines to depths between 579·12 metres and 921·84 metres, but, unfortunately, no economic mineral was located. As a result of this disappointing exploration, North Broken Hill decided not to proceed with any further exploration on the area and the joint venture agreement was terminated in October, 1974. In the meantime, negotiations are taking place for joint venture agreements with certain partners for the purpose of mining and supplying silica to Mount Isa Mines. It is expected that operations will commence some time during the first half of this year.

ANACONDA AUSTRALIA INC.

Lease Nos. 7450 *to* 7454.—No mining was done on these leases. Exploration work consisted of the relogging of 3 000 metres of diamond drill core. Also reassessment of surface geological mapping and geophysical survey information as well as petrographic and mineragraphic studies.

Lease Nos. 7455 *and* 7456.—There was no mining done on these leases and exploration work was a brief reassessment of surface geological mapping and geochemical sampling data.

Authorities to Prospect 1 343*M*, 1 344*M and* 1 155*M* (Lockness South, Lockness North, and Redie Creek).—No mining was done on these authorities. Exploration work consisted mainly of regional and detailed surface geological mapping and airborne magnetic surveys and reconnaisance work. Some diamond drilling was completed on *Authorities to Prospect* 1 343*M and* 1 155*M*.

AUSTRALIAN COPPER MINES N.L.

The company has advised that no mining or exploration activity was carried out during the year.

AMDEX MINING LIMITED

Yelvertoft Authority to Prospect 315*M and Lady Annie Authority to Prospect* 1 171*M*.—Geological mapping on a regional scale (1:20 000) was carried out over these two authorities to prospect during the first quarter of 1974 by one geologist. Triako Mines N.L. had a joint venture agreement with I.M.C. Development Corporation on *Yelvertoft Authority to Prospect* 315*M*. This was terminated in October 1974, so Triako has not carried out exploration of the area since this time. *Lady Annie Authority to Prospect* 1 171*M* is held as a joint venture between Triako Mines N.L. and Placer Prospecting (Australia) Pty. Ltd., with the latter company carrying out the majority of exploration on the area.

MOUNT CARRINGTON MINES LIMITED

This Company holds four mining leases in this district. It has reported that the leases were not actively prospected and no drilling or site exploration work was carried out during 1974.

QUEENSLAND MINES LIMITED

Lease Nos. 5 907, 6 036, 6 055, 4 121, 7 368, 5 861 *and* 7 395 *to* 7 414.—There was no activity on these leases registered in the name of Queensland Mines Limited.

Lease Nos. 4 233 *to* 4 236 *and* 4 316 *to* 4 320.—There was no activity on these leases registered in the name of Australasian Oil Exploration Ltd.

Authority to Prospect 996*M*.—Ground traverse geological mapping and radiometric surveying was done on this Authority to Prospect in the name of Queensland Mines Limited.

SMALL MINES

Copper production was reported from 24 producers. This is 11 more than last year. Production figures are as follows:—

Year	Ore	Copper	Gross Value
	Tonnes	Tonnes	$
1973	5 138	263	324 363
1974	3 444	132	181 725

General

During the year 60 applications for mining leases were received compared to 94 in 1973.

Table A

PRODUCTION FIGURES, 1974—MOUNT ISA MINES LIMITED, ORE ONLY

LEAD ORE YIELD

Treated	Lead		Zinc		Silver	
	Yield	Value	Yield	Value	Yield	Value
Tonnes	Tonnes	$	Tonnes	$	Kg	$
2 208 124	119 381	48 867 419	103 051	55 677 425	327 726	34 165 436

COPPER ORE YIELD

Treated	Copper	Value
Tonnes	Tonnes	$
4 949 215	159 460	206 145 104

Table B

DROSS EXPORTED, 1974—MOUNT ISA MINES LIMITED

Net Tonnes	Copper Yield	Value	Silver Yield	Value	Lead Yield	Value	Total Value
Tonnes	Tonnes	$	Kg	$	Tonnes	$	$
1 446	266	251 698	1 262	122 578	833	301 523	675 799

Table C

COPPER PRODUCTION, 1974—INDIVIDUAL MINES—TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Ore	Copper	Value
		Tonnes	Tonnes	$
Again Syndicate	Again	54·690 7	2·787 2	2 969
R. Croft	Barbara	28·197 3	1·705 9	2 475
L. and M. Mezey	Boomerang	42·266 4	2·780 7	4 029
V. R. McNamara and W. A. Bimrose	Brown Beauty	32·042 7	1·457 4	1 804
J. A. Simon and N. Meranda	Dunkerke	7·007 7	0·332 2	422
L. G. Cozzi	Edgarda	32·006 5	1·901 2	2 024
N. D'Amico	Glennis	66·488 3	2·586 3	3 260
R. Vanelli	Kajabbi Dump	15·209 9	0·540 0	686
F. and G. A. Moro	Lily May No. 1	500·180 4	18·777 8	24 739
G. Kelly	Little Shamrock	41·881 9	0·724 5	994
L. G. Cozzi	Lucky Revenue	364·714 6	9·898 4	14 003
C. Poletti and E. Ferdusi	Lucky Revenue	224·408 4	7·243 0	9 022
Derrick Stuart Mining	Manxman	285·781 1	12·907 5	21 087
R. D. and D. J. Scoble and W. J. Polmeer	Mystery	46·032 3	3·976 5	4 248
I. Foschi and N. D'Amico	Nil Desperandum	670·766 7	26·245 3	37 801
T. and L. Dolzan	Nil Desperandum No. 2	149·104 3	3·160 8	4 315
J. F. Killeen	Referee South	21·710 6	0·594 2	798
G. Grote	Revenue Central	9·385 4	0·624 1	906
C. Poletti and L. Cozzi	Revenue Extended	285·196 9	4·567 2	7 555
I. Pether	Yaccamunda No. 2	12·569 2	0·559 3	595
Koolamara Mining Co.	Lady Fanny	63·731 4	1·655 3	2 417
Koolamara Mining Co.	Mike	217·914 1	18·989 5	27 599
Pioneer Mining and Exploration	North Hope	248·505 7	6·947 3	7 172
Koolamara Mining Co.	Wonder	23·977 4	0·707 8	805
Totals		3 443·769 9	131·669 4	181 725

Table D

SILICA PRODUCTION, 1974—SMALL MINES TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Tonnes	Value
			$
Kalkadoon Mining and Letts	The Blow	3 913·15	27 523
Kalkadoon Mining and Letts	Warrigal	14 005·17	102 311
Totals		17 918·32	129 834

Table E

LIMESTONE FLUX PRODUCTION, 1974—SMALL MINES TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Tonnes	Value
			$
Koolamara Mining Co.	Robin	56 554·59	402 048
N. Shaw	The Valley	16 434·94	93 223
Totals		72 989·53	495 271

Table F

COPPER PRODUCTION FROM MINES SITUATED IN THE NORTHERN TERRITORY AND TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Treated	Copper	Estimated Value
		Tonnes	Tonnes	$
P. J. and M. Davis	Gorge	46·941 0	4·874 5	6 678
A. B. and H. Barclay	Pandus Creek	66·789 5	7·515 7	8 419
Totals		113·730 5	12·390 2	15 097

Table G

COPPER PRECIPITATE PRODUCTION, 1974—NON-SMALL MINES TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Treated	Copper	Value
		Tonnes	Tonnes	$
Koolamara Mining Co.	Lady Fanny	3·993 1	1·226 7	1 499

Table H

GOLD PRODUCTION, 1974—SMALL MINES TREATED BY MOUNT ISA MINES LIMITED

Producer	Mine	Treated	Yield	Value
		Tonnes	Grams	$
R. D. and J. D. Scoble and W. J. Polmeer	Mystery	46·032 3	84	79

W. J. McKAY, Acting Warden.

MOUNT MORGAN DISTRICT

MOUNT MORGAN LIMITED

Gold, Silver, Copper

Mine.—Total material mined was 3·81 million tonnes (previous year 4·10 million tonnes). Removal of overburden continued from numbers 2 to 8 benches.

Ore was mined from both the Mount Morgan and Sugarloaf sections of the open-cut. Deliveries of ore to mills amounted to 1·05 million tonnes (net) of which 9 per cent. came from outside reserves.

Prospecting

All prospecting for the company was carried out by Geopeko Limited.

Smelter

Smelting was carried out during the year in the flash smelter.

Combined Mills

—		Year	
		1973	1974
Tonnes milled		1 186 900	1 044 080
Head Assay	Au.	1·43 g/t	2·37 g/t
	Cu.	0·76 per cent.	1·00 per cent.
Recovery per cent.	Au.	60·30	66·50
	Cu.	91·00	90·40

PRODUCTION FIGURES

Mine.—The following quantities of material were handled:—

—	Tonnes
Ore to Sulphide Mills	1 048 502 net
Waste to Dumps	2 763 767 gross
	3 812 269

Treatment.—The sulphide mills treated 1 044 080 tonnes of ore averaging 2·37 grams per tonne gold and 1·00 per cent. copper. In addition the mills processed 119 210 tonnes of reclaimed tailings and 70 250 tonnes of smelter slag. Concentrates produced totalled 72 810 tonnes containing 1 978·92 kg of gold, 11 557 tonnes of copper and 1 518·47 kg of silver. Sales of pyrite totalled 677 tonnes valued at $16 792 with no production being recorded for the year.

Copper Smelter	Production from Mount Morgan Ore only	Production from All Purchased Ores
Blister	9 794·17 tonnes	Nil
Copper	9 745·08 tonnes	Nil
Gold	1 962·49 Kg	Nil
Silver	1 517·91 Kg	Nil

No ore was purchased from Mount Morgan District or other districts.

GEOPEKO LIMITED—MOUNT MORGAN

The Company advised that there was no production for the year but a total of 433 man days was spent on general exploration work including geological and geochemical reconnaissance and detailed geochemical, geophysical and geological work in selected areas.

COAL

Dawson Valley Colliery.—No report was received from the Company operating this colliery.

Callide Coal Mines (M.Ls. 83 and 87).—The mines are operated by Callide Open-cut Collieries Pty. Ltd., Biloela Callide Open Cut Pty. Ltd. and Thiess Bros. Pty. Ltd. Thiess Bros. Pty. Ltd. reported on behalf of the three companies that coal was won from both leases during the year. They also advised that work has commenced on the new coal handling plant and associated development.

Moura Coal Leases.—The leases are operated by Thiess Peabody Mitsui Coal Pty. Ltd. who report that coal was won from *M.L. Nos.* 126, 137, 140, 142, 144, 155 *and* 169. The ore was obtained from the Moura Open Cut and Moura Underground Nos. 1, 2 and 3. Kianga Coal Company obtained coal from *M.L. Nos.* 126, 189 *and* 170—Kianga Open-cut and Kianga Underground No. 1 Thiess Peabody Mitsui Coal Pty. Ltd. advised on behalf of both Companies that no new development work was undertaken during the year.

EXPLORATION AND DEVELOPMENT

During the year prospecting was carried out in this district. There were 18 authorities to prospect for minerals in force at the close of the year. There were also 4 authorities to prospect for coal and 5 for petroleum at the close of the year.

Applications for permits to enter on private land (mainly repetitive) totalled 64.

E. N. LOANE, Warden.

NANANGO DISTRICT

The mining activity in the Nanango District revolved around the production of limestone, kaolin clay, brick clay and bentonite clay. The value of production of minerals excluding gold during the year was $100 442 which was down in value by $14 120 on the previous year. Two new applications for mining leases were recommended for approval by the Warden during the year and there are four additional leases for kaolin clay presently before the Wardens Court. There are 34 live applications on hand, this being one less than in the previous year. The area of private land contained by mineral leases was 103 hectares and together with an area of 217 hectares of Crown land under mineral lease made a total area under mineral lease in this district of 320 hectares. Activity under the mining on private land section of the Act was noticeably increased with 177 permits to enter being issued, 111 more than 1973. There were only sixteen miners rights issued. Limestone production was down by 189 tonnes and also production of brick clay was down by 3 842 tonnes. However, there was an increase of production of kaolin clay by 779 tonnes and bentonite clay production was up by 41 tonnes.

Hereunder is a summary of mining operations reported for the year:—

Copper

Mineral Lease Application No. 169 (Michail and Farynnky).—No production was reported for the year.

Felspar

Mineral Lease Application No. 195 (Rylance Refractories).—No production was reported.

Garnet

Mineral Lease Application No. 136 (Mollenhauer).—This lease is maintained by the lessee for amateur gem hunters and is not worked commercially.

Gold

Mineral Lease Application No. 171 (Turnbull).—From ore treated, 23·1 grams of gold were produced for a value of $20.97. Access to the lease was affected by wet weather conditions in the first half of 1974 and during the latter part of the year shaft sinking was done by hand as the compressor was sent away for overhauling. The shaft was sunk to a depth of five metres and further shaft sinking is intended to be carried out in the coming year. Surface prospecting was also carried out.

Mineral Lease Application No. 172 (Davies).—No production was reported.

Mineral Lease Application No. 173 (Gerhardt and Lyons).—Three men were employed in surface prospecting and one man with shaft sinking during the year. No production was reported.

Granite

Mineral Lease Application No. 104 (Langton).—No production was reported.

Mineral Lease Application Nos. 129 *and* 130 (Lowther & Son).—No production was reported.

Bentonite Clay

Mineral Lease Application No. 64 (Margrie).—Production of 107 tonnes was reported for a value of $2 140.

Mineral Lease Application No. 87 (Margrie).—No production was reported.

Brick Clay

Mineral Lease Application No. 146 (Nanango Brick Works).—A total of 295 tonnes of clay was produced for a value of $2 153.

Mineral Lease Applications Nos. 163 *and* 164. (Continental Enterprises Pty. Ltd.).—A total of 4 300 tonnes was produced for a value of $1 505.

Kaolin Clay

Mineral Lease Applications Nos. 105, 113, 114 *and* 159 (Bjelke-Petersen Enterprises Pty. Ltd. and R. E. Black).—A production of 2 084 tonnes was reported for a value of $37 540.

Mineral Lease Application No. 144 (Renaud).—No production was reported.

Mineral Lease Application No. 148 (Bjelke-Petersen Enterprises and R. E. Black).—No production was reported.

Mineral Lease Application No. 151 (MacFarlane).—Upon completion of survey and siting of claim a programme of auger drilling will be commenced. No production was reported.

Pottery Clay

Mineral Lease Application No. 86 (L. Langton, J. Bjelke-Petersen and R. E. Black).—No production was reported for the year.

Limestone

Mineral Lease Application No. 84 (Roots).—Diamond drills have been bored in the last three months of the year. However proven reserve figures are not yet available. No production was reported.

Mineral Lease Applications Nos. 85, 124, 125 *and* 145 (Runge).—Quarries have been opened up on each lease and a total of 7 280 tonnes was produced for a value of $57 104.

Manganese

Mineral Lease Application No. 166 (Broadfoot and Illing).—Sampling only was carried out during the year. A market for the mineral was cancelled and no production was carried out.

Silver Lead

Mineral Lease Application No. 126 (Ollenburg).—Surface prospecting only was carried out and some samples were taken.

Mineral Lease Application No. 156 (O'Hagen, McDonald, Perry, Gray and Brady).—No production was reported.

Mineral Lease Applications 176, 177 *and* 178 (Archbold, Macey and Woodward).—No production was reported.

Vermiculite

Mineral Lease Application No. 103 (Hansen and Langton).—No production was reported.

TABLE OF PRODUCTION FROM ALL SOURCES

Producer	Quantity	Value
	kg	$
Gold		
M.L.O. 717—J. J. Turnbull	0·023	21
Bentonite Clay	tonnes	
M.L.A. 64—G. C. Margrie	107	2 140
Brick Clay	tonnes	
M.L.A. 146—Nanango Brick Works ..	295	2 153
M.L.A. 163, 164—Continental Enter. P/L	4 300	1 505
Kaolin Clay	tonnes	
M.L.A. 105, 113, 114, 159—Bjelke-Petersen Enterprises and R. E. Black	2 084	37 540
Limestone	tonnes	
M.L.A. 85, 124, 125, 145—Runge and Runge	7 280	57 104
Total	..	100 463

R. W. BOUGOURE, Warden.

ROCKHAMPTON DISTRICT

Limestone

Central Queensland Cement Pty. Ltd., The Caves, raised 206 726 tonnes of limestone valued at approximately $723.544. On an average 15 men were employed during the period.

Clay

Keppel Bricks Pty. Ltd. manufactured a total of 2 529 892 bricks during the period. On an average, 28 permanent and three casual men were employed. A total of 8 576·3 cubic metres of clay was mined during the year.

Central Queensland Cement Pty. Ltd., The Caves, raised 27 150 tonnes of clay during the period for an approximate value of $43 394.

Gold

The Commonwealth Trading Bank, Rockhampton has advised that no gold proceeds were received during the period.

Chrysoprase

Messrs. Kayes and Lenz of Marlborough recovered 11 862 kilograms of thundereggs and rhyolite of varying qualities. On an average, 4 men were employed in the processing of chrysoprase. A total of 46·4 kilograms of chrysoprase was recovered.

Capricornia Mineral Company removed approximately 253 620 cubic metres of overburden and mined 8 981 kilos of chrysoprase of varying grades during the period. On an average, 8 men were employed during this period. There is a considerable amount of overburden to be removed before the new series of benches are in full production and prospects for future chrysoprase production are good.

Salt

The figures for the production of salt shows a decrease to those of last year, a total of 81 749 tonnes being produced for the period ending 31st December, 1974.

The two companies associated with salt production are Central Queensland Salt Industries Limited and Imperial Chemical Industries Australia Limited both of Bajool. A total of 25 119 tonnes was produced by Central Queensland Salt Industries Limited and Imperial Chemical Industries Australia Limited produced 56 630 tonnes.

Other Minerals

No reports were received from Broken Hill Co. Pty. Ltd., on work carried out on their Authorities to Prospect.

General

During the year, 8 mining lease applications were received. Only a small number of objections were received during the year, mainly in regard to miner's homestead perpetual lease applications lodged. There was a slight decrease in the issue of miner's rights, the figure this year being 319.

E. N. LOANE, Warden.

ROMA DISTRICT

As in 1973, there was very little mining activity in the district for the year. There are presently eleven mining lease applications held in this district, of which number, five were applied for during 1974. Some petrified wood was mined during the year. A total of 45 permits to enter on private land and 41 miner's rights were issued during the year. There were no application for prospecting assistance.

R. J. SULLIVAN, Warden.

SOUTHPORT DISTRICT

The total value of reported production of minerals for the year ended the 31st December, 1974 amounted to $630 548, being an increase of $357 295 when compared with the production figure for the year 1973.

Rutile, Zircon &c.

A.D.C. 43, *M.L.* 1096 *and M.L.* 1112. (Currumbin Minerals Pty. Ltd.).—The company has advised that an average of 16 men were employed in producing 1 336·20 tonnes of zircon having a value of $262 000 and 1 150·56 tonnes of rutile having a value of $338 400.

D.C. 22, *D.C.* 23 *and D.C.* 33. (Associated Minerals Pty. Ltd.).—No work was performed on these claims during the year 1974 as production is dependent on the presence of mineral concentration which may take place from time to time.

M.L. 969, *M.L.* 970 *and M.L.* 971. (Associated Minerals Pty. Ltd.).—No production was effected on these leases during the year. *M.L.* 970 *and M.L.* 971 were granted on the 1st December, 1974 and *M.L.* 969 was granted on the 1st January, 1975.

A.D.C. 42, *M.L.* 408, *M.L.* 410 *and M.L.* 1062. (Mineral Deposits Ltd.).—The company advised that no minerals were won for the year from the claim or from the leases.

Perlite

M.L. 315 *and M.L.* 320. (Australian Gypsum Ltd.).—The lessee has advised that one person was employed by him and two persons were employed by a contractor in the producing of 2 060·74 tonnes of perlite, the value of which amounted to $22 671.

Jasper

M.L. 992 (Soloman James Currey).—The lessee has advised that there was no production on this lease during the year.

Gold

M.L. 1116 (George Herbert Hester).—The lessee has advised that no mining operations were performed on the lease during the year.

Agate

M.L. 1050 (Albert Herbert Parker and Mary Parker).—The lessees have advised that an average of seventeen persons per week gathered specimens on the lease. Each person gathered an average of seven pounds of agate specimens only as the stone is of hobby value only.

Clay

M.L. 392, *M.L.* 1065 *and M.L.* 1120 (Earthenware Pipes Pty. Ltd.).—The company has advised that an average of three persons were employed by a contractor in producing 3 948·44 tonnes of clay with a value of $7 357.

M.L. 1132 (Colour Ceramics Pty. Ltd.).—The company has advised that one person was employed by the company and one person was employed by a contractor in producing 24·48 tonnes of clay with a value of $120.

J. B. RUTHERFORD, Warden.

STANTHORPE DISTRICT

Mineral production in the Stanthorpe mining district during the year was limited to alluvial tin and limestone. Tin concentrates were produced from mining freeholds within the district with some production coming from just outside the district in New South Wales. No individual returns are available in respect of mining freehold production. During the year 29 miner's rights were issued and 19 permits to enter private land were granted by the Warden. Three applications for mining leases were received.

Set out hereunder are the reported activities on various leases during the year:—

Limestone

M.Ls, 267, 275, 276 *and* 341 (The Marbarete Company Limited).—Five men were employed on the company's lease at Limevale during the year. Production of limestone totalled 704 tonnes valued at $20 204.

Marble

No activity reported.

Silver, Lead, Zinc, Copper

No activity reported.

Gold

No activity reported.

Tin

M.L. 430, 435 *and* 436 (B. J. and N. J. Tulloch).—One man was employed during the last quarter and 100 kg of concentrates were extracted valued at $295.

There were no other reports of production of tin apart from that extracted from mining freeholds. Production from this source was 43·236 tonnes valued at $146 989. No individual returns are available in respect of this production, some originating from just outside the district in the State of New South Wales.

There were no other activities reported in respect of other leases within the district.

Production figures were:—

Name of Producer	Quantity	Value
	Tonnes	$
Limestone		
The Marberete Company Pty. Ltd. ..	704·00	20 204
Tin		
B. J. and N. J. Tulloch	0·10	295
Various Producers on Mineral Freeholds	43·24	146 989

B. J. BUSHELL, Warden.

THURSDAY ISLAND DISTRICT

During the year, there was little activity in the area and very few inquiries. An application for a lease to recover guano was lodged over the whole of Raine Island. However the application was rejected.

The only production reported in the area was on mining lease *No.* 32 *Bell May* owned by Mr. U. M. B. Mulholland. For the period a total of 0·1515 tonnes of tin for a return of $363 was obtained. The producer reports that very little work was done during the year.

There were six miner's rights issued. No applications for permits to enter private land were received.

B. J. BLADES, Acting Warden.

TOOWOOMBA DISTRICT

Mining statistics for the Toowoomba District for 1974 reveal an increase in value for coal and clay but a fall in actual mine production. In the case of diatomite, the processing plant is now situated at the mine site and as a result there has been a considerable reduction in production costs. Also production has increased significantly for the year 1974. There are now 35 current leases or applications for leases in this district, a fall of 2 from the previous year.

The following are the comparative tables of production for the Toowoomba District—

Table A

COMPARATIVE FIGURES—COAL OUTPUT—1970-74

Year	Quantity	Value
	Tonnes	$
1970	11 760	72 564
1971	12 307	96 000
1972	12 615	110 516
1973	13 543	130 013
1974	11 769	154 409

Table B

COMPARATIVE FIGURES—BRICK CLAY PRODUCTION—1970-74

Year	Quantity	Value
	Tonnes	$
1970	20 940	15 220
1971	18 288	14 200
1972	18 369	14 416
1973	23 144	18 759
1974	19 968	19 852

Table C

COMPARATIVE FIGURES—DIATOMITE PRODUCTION—1970-74

Year	Quantity	Value
	Tonnes	$
1970	567	3 941
1971	138	1 360
1972	61	600
1973	96	960
1974	650	1 300

B. H. GARDNER, Acting Warden.

TOWNSVILLE DISTRICT

Mining activity continued at approximately the same level as in the year 1973. Permits to enter private land totalled 8 compared with 7 in 1973 and 16 in 1972. These covered a search for silica and felspar. The number of miners rights issued showed no significant change. As in 1973, the number of general mining inquiries dealt with at the office was not as great as in previous years. Mining leases applied for during the year totalled 8 compared with 18 for the year 1973. The following production was recorded for the year:—

Mineral	Producer	Quantity	Value
		Tonnes	$
Limestone ..	North Australian Cement Limited	331 149	358 355
Burnt Lime	Calcium Products Pty. Ltd. ..	6 040	163 077
Pulverised Lime	Calcium Products Pty. Ltd. ..	1 928	19 593
Earth Lime	D. A. and B. D. Bosworth ..	819	410
Ironstone ..	North Australian Cement Limited	8 128	24 314
Clay ..	North Australian Cement Limited	47 532	10 927
	Clay Industries	25 000	39 000
Silica ..	R. Stanley	12 500	27 707
	Ryan, Buck, Buck and Patrick	1 587	2 777

Approximately 60 men were employed in the above production.

M.L. 50 *and M.L.* 69 (P. V. and J. E. Graham—Reid River Lime Company).—Advice was received that there was no lime production on these leases for the year 1974.

M.Ls. 65, 66, 68, 116, 180 *and S.M.L.* 75 (North Australian Cement Limited).—There was no production of ironstone on *M.L.* 65 during the year. On *M.L.* 66, a total of 8 128 tonnes of ironstone was extracted by a contractor and carted to Stuart for use in cement manufacture. No development or investigatory work was undertaken. Clay lease No. *M.L.* 68 produced 47 532 tonnes of clay which was extracted by company personnel and trucked to the raw mill for use in cement manufacture. Investigatory work to the value of $540 was undertaken. *S.M.L.* 75 (limestone lease) was inoperative during the year. However expenditure of $40 586 was incurred on roadworks and $3 733 on investigatory work. From *M.L.* 116 a total of 331 149 tonnes of limestone was extracted by company personnel and railed to the Stuart plant for use in cement manufacture. The average number of men employed in production was 15. During the year the sum of $8 992 was expended on the acquisition of an Atlas Copco compressor. There was no production on *M.L.* 180 (clay lease) during the year 1974.

M.Ls. 76, 92 *and* 93 (Clay Industries Pty. Ltd.).—A total of approximately 25 000 tonnes of clay was extracted and used in the manufacture of bricks.

M.L. 82 (M. Ryan, P. J. Ryan and M. T. Ryan).—No production was reported for the year 1974.

M.Ls. 87, 117, *and* 135 (Calcium Products Pty. Ltd.).—No limestone was quarried on these leases during the year ended 31st December, 1974. The present quarry is situated on an adjoining lease held by North Australian Cement Limited and is worked by Calcium Products Limited by arrangement with North Australian Cement Limited. A total of 17 844 tonnes of limestone was quarried under this arrangement and $892 was paid to North Australian Cement Limited as a refund of Crown Royalties paid by it. Two new kilns, an elevator and a pulveriser were erected on *M.L.* 135 at a cost of $125 000 during the year.

M.L. 94 (P. J. Hannon. Formerly owned by L. and M. S. Carty).—There was no production of earth lime on this lease during 1974.

M.Ls. 98 *to* 102 *and* 111 (J. R. Stanley).—A total of 12 500 tonnes of silica was extracted during the year 1974.

M.L. 115 (D. A. and B. D. Bosworth).—A total of 819 tonnes of earth lime was produced for agricultural purposes.

M.L. 171 (A. J. Paice).—Only 5 cwts of wolfram has been extracted and is on hand awaiting sale. Exploratory work has uncovered further traces of molybdenite and wolfram. Owing to the recent heavy rain the mine is presently flooded and only surface prospecting and repairs to the access road can be carried out during the wet season.

M.Ls. 188 *to* 192, 194, *and* 202 *to* 208 (L. K. Ryan, A. R. Buck, N. D. Buck and J. P. Patrick).—A total of 1 587 tonnes of silica was extracted and sold. The main work carried out during the year 1974 in relation to all leases was with market feasibility investigations, both overseas and locally.

F. J. HENDERSON, Warden.

WARWICK DISTRICT

Hereunder is a summary of mining operations reported for the year:—

Gold and Silver

M.L. No. 52 (W.A.M. Prospecting Syndicate).—No production reported.

M.L. No. 54 (W.A.M. Prospecting Syndicate).—No production reported.

Clay

M.L. No. 20 (A.C. Schnitzerling).—Production totalled 3 700 tonnes valued at $3 700.

Rhodonite

M.L. No. 21 (D. A. Robinson and Others).—Production totalled 2·5 tonnes valued at $1 000.

Limestone

M.L. No. 8 (Marberete Co. Pty. Ltd.).—Production totalled 144 tonnes valued at $4 966.

M.L. Nos. 18 *and* 19 (Qld. Minerals Pty. Ltd.).—No production reported.

M.L. No. 26 (Marberete Co. Pty. Ltd.).—Production totalled 170 tonnes valued at $5 863.

M.L. No. 59 (Marberete Co. Pty. Ltd.).—Production totalled 200 tonnes valued at $6 898.

M.L. No. 33 (Tooliambi Mines Pty. Ltd.).—Production totalled 3 970 tonnes valued at $68 684.

B. J. BUSHELL, Warden

REPORT OF THE STATE MINING ENGINEER

The Under Secretary for Mines, Brisbane.

SIR, I have the honour to submit my report for the year 1974. The report is divided into Sections as follows:—

Section I—Review of the Industry.
Section II—Development and Production.
Section III—Employment.
Section IV—Accidents and Safety.
Section V—General.
Section VI—Petroleum.

The detailed reports of the Inspectors of Mines, the Electrical Inspectors of Mines and the Boring and Mechanical Superintendent have been omitted since they are being published in the *Queensland Government Mining Journal.*

Notes from the reports of Inspectors, officers of the Drilling Branch, the Statistical Section and the Petroleum Section have been included in appropriate Sections of this report.

A. W. NORRIE,
State Mining Engineer.

SECTION 1—REVIEW OF THE INDUSTRY

At the end of 1974, there were 231 Authorities to Prospect current. The corresponding figure for 1973 was 211. Activity in prospecting was however curtailed by uncertain economic conditions.

The heavy rains during the early months of 1974 resulted in production losses at many large and small mines in the State.

Production of copper again increased during the year. Also the production of bauxite increased and major items of plant were commissioned.

Mineral sands production and value expanded, while vociferous opposition to sand mining continued to introduce a degree of uncertainty as to the future of such operations in Queensland.

The quantity of gold ore mined remained approximately the same as in the previous year but the value declined and no additional reserves were discovered.

The quantity and value of silica, limestone, stone and clays again expanded. With an increase in the number of gazetted quarries, the Department assumed responsibility for the safety and health of a rapidly expanding section of the mining industry.

Tin production remained steady but favourable tin prices resulted in higher values than in 1973.

Construction of facilities at Greenvale was largely completed during the year. Shipping of ore by rail to Yabulu commenced in August.

Following a decision to re-open Mary Kathleen uranium mine, a start was made in overhauling the basic plant facilities. Production is planned to start during 1975.

Production of phosphate, on a limited scale, commenced during the year from the Duchess area, pending decisions on construction of treatment plant, town facilities and other infrastructures.

All winding ropes were tested by staff of the Mines Department at the workshops of the Drilling Branch at Redbank.

Lack of finance and a discouraging success ratio were factors that kept onshore petroleum exploration at the same low ebb as the previous four years, and resulted in no new oil or gas discoveries. Offshore, activities were stagnant.

There was a slight increase in natural gas production, but crude oil production from Moonie and Alton oilfields continued to decline.

Metal Markets

Early 1974 continued the trend of 1973 with high prices as speculators continued to flock to the metal markets of the world. However, after the market reached its peak period in April, prices in the base metals began to take a downturn that reflected the economic problems many of the world's countries were encountering. Only the precious metals, gold and silver, and the mineral sands continued to attract a sustained demand from buyers although even silver lost some ground at the end of the year. Major influences on the markets were: (a) large-scale crop failures during late 1973; (b) currency problems in many "western" countries; and (c) higher O.P.E.C. oil prices and the forms of payment demanded by them. These and other minor influences resulted in high rates of inflation and balance of payments problems in many countries.

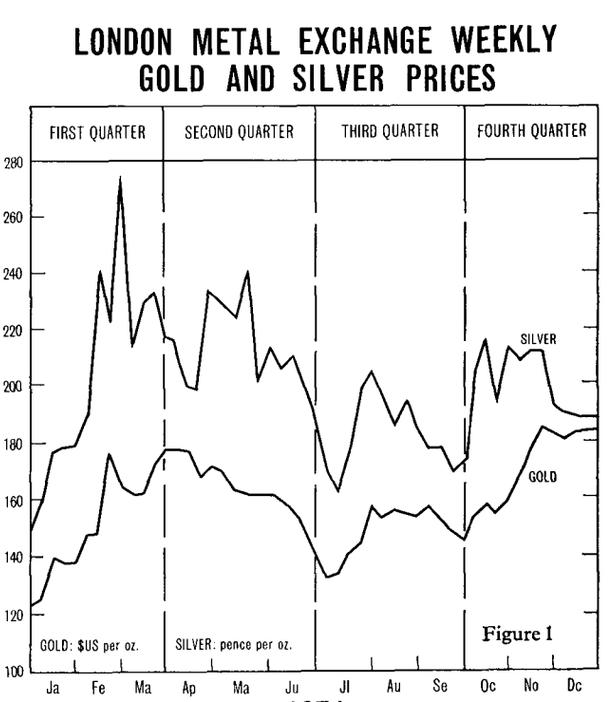


Figure 1

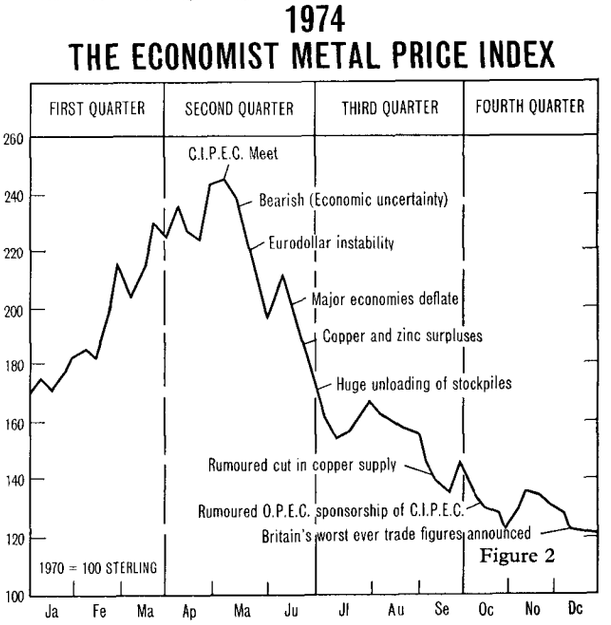


Figure 2

Gold

The initial London Free Market price for the year was U.S. $124 and climbed steadily until mid-April, when it reached U.S. $178. However, the rise was not sustained and by July the price dropped to U.S. $129 as a downturn in secondary industries began in the world's economies. But, by August, prices began to climb again as gold resumed its traditional role as "the" hedge against inflation. Speculators returned to gold to protect their assets against volatile exchange markets and floating currencies. The end of year price of U.S. $185 indicated that it will be one of the few commodities in 1975 to have a strong market. The peak price for the year, U.S. $190 was reached on November 18th.

In Australia, members of the Gold Producers' Association of Australia received high premiums as in the previous year. A devaluation of the Australian dollar in September resulted in a rise in the official price for gold in terms of the Australian dollar—$A28.38 per fine oz. to $A32.25 per fine oz. The official price is based on the United States price of U.S. $42.22 per fine oz. The enormous difference between this official price and the unofficial market price has led to speculation of a future realignment in the official price.

Silver

Silver began the year as an outstanding performer with "bullish" speculative activity, forging the price from 149 pence (per troy oz.) to reach 278 pence by the end of February. However, as fears of an economic recession overcame the world's markets, the prices of base metals tumbled and the precious metal followed suit to reach a mid-year low of 163 pence in early July. But, with the unloading of metal stocks, the cash realized was invested in silver and gold as hedges by investors to safeguard funds. By mid-November the price had reached 212 pence. But, rather dramatically, silver lost ground when the U.S. Government announced its intention to release 2 million ounces of gold. It did not move in unison with gold during the remainder of the year proving that its price is decided primarily by industrial demand rather than speculative demand (as is gold's).

Aluminium

The free market price for aluminium on the London Metal Exchange (L.M.E.) altered only slightly during the first half of the year rising from £400 stg. (per tonne) to reach a peak of £475 stg. by May. The main reasons were supply of scrap metal to the market and a marginal spin-off from rises other metals were receiving in the light of high speculative activity in London. However, the depression that overcame the metal markets in mid-year combined with the little aluminium trading that is done on the L.M.E., resulted in the metal's price gradually declining to finish the year at £300 stg.

Zinc

Both the cash price for zinc on the L.M.E. and the U.S. Producer's Price rose sharply during January to reach £712 stg. per tonne (from £524 stg.) and U.S. $00.3 150 per lb. (from U.S. $00.2 125) respectively. However, speculators moved out of the L.M.E. during February as warehouse stocks increased and the cash price fell to £595 stg. But this market quickly picked up because of some speculative buying with very little profit-taking. The cash price reached its peak at £840 stg. in April. The Producer Price rose to U.S. $00.3 450 in April because of rising production costs. In May, the supply situation eased and the cash price began to fall. This situation continued through to the end of the year due to faltering consumer demand and world economic conditions. The principle reason for this was a large scale cut in motor car production throughout the western world. The final cash price for the year was £305 stg. and the final U.S. Producer Price was U.S. $00.38 per lb.

Copper

The price of copper on the L.M.E. leapt substantially in the period from January until April. From the year's initial price of £872 stg. (per tonne) a peak price for the year of £1 345 stg. was reached in April. However, by May, the acute shortage of copper that caused the price rises no longer existed, as Japan had unloaded massive stockpiles of copper onto the market forcing the price to fall to £1 040 stg. by the end of May. After a short recovery in June—(about $1 105 stg.)—expected low future levels of industrial demand caused prices to decline for the rest of the year. The final price for the year was £522 stg.

Lead

Early in the year, slight rises in lead prices occurred as a result of: (a) rises in production costs caused by the oil crisis which forced the Producer Price up from U.S. $00.165 (per lb.) in January to U.S. $00.245 by May; and (b) some spin-off of the speculative buying activity in the metal markets during this period caused the cash price on the L.M.E. to rise from £250 stg. (per tonne) to reach £312.5 stg. by early March. However, from May onwards cash lead prices followed those of the influential base metal, copper, and fell to the end of the year at £229 stg.

Tin

In the first half of the year, rises in the precious metals spun off onto tin and the price rose to £3 990 stg. (per tonne) by early May—an increase of £1 300 stg. from the year's initial price. On May 30, the International Tin Council raised its buffer stock price ranges to offset cost increases to producers. However, by July, prices were affected by depressed London markets and the price fell to around £3 400 stg. Strong U.S. buying on the Penang market had forced the price to a peak of £4 195 stg. by September but, by October, buyers tended to move out of the tin market even though there was a shortfall in supply and by the end of the year the price had tumbled to £3 020 stg. The principal reason was hedge-selling as speculators and investors moved into the precious metals as economic conditions worsened.

Nickel

Fluctuations in the Producer Price (P.P.) for nickel as determined by the International Nickel Co. of Canada during the year occurred because of: (a) the monthly variations in the average exchange rate of pounds sterling (which the L.M.E. uses to quote the P.P.) and the U.S. dollar (which I.N.C.O. uses to quote the P.P.); and (b) rising costs by I.N.C.O., which were brought about by economic conditions in Canada, were passed onto consumers. This price varied from £1 463.16 stg (per tonne) on January 1, £1 639.48 stg. on March 1, £1 511.00 stg. on July 1, £1 749.85 stg. on August 1, £1 805.68 stg. on November 1 to £1 792.83 stg. on December 31.

Open market prices were boosted in the early part of the year by strong demand from dealers and consumers. From January 1, the price rose from U.S. $1.45–$1.55 per lb. to U.S. $2.30–$2.45 per lb. by July. However, prices fell after this because of a lack of confidence in the market place as the industrial production situation throughout the world became more and more confused. The final price for the year was U.S. $1.75–$1.95 per lb.

Mineral Sands

The end of the year prices* for both rutile and zircon were a far cry from the year's initial prices. On January 1, rutile's price was $A140–$A150 rising to $A290–$A330 by December 31. Zircon prices $A65–$A75 at January 1 rose to $A290–$A330 by December 31. Zircon's prices moved into line with rutile's and can no longer be considered the poor relation of the two as its previous history would indicate. Main reasons for the increases were—

(a) tightness in supplies while demand remained strong;

(b) increases in freight costs (shipping charges).

*All prices are bagged fob/fid per metric ton.

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974

For All Minerals unless stated otherwise :—
* For Beach Sands.
† For Zircon, Rutile, Ilmenite and Monazite.
‡ For All Minerals excluding Phosphate, Uranium and Vanadium.
§ For Phosphate, Uranium and Vanadium.
s.b. = Sub-blocks as defined in the Act; sq. ml. = square miles.

No.	Locality		Area	Titleholder
			s.b.	
294M	Princhester	(1)	204	The Broken Hill Proprietary Company Limited
	South-West of Yeppoon	(2)	46	
			sq. ml.	
348M	Double Island Point		18	Cudgen Rutile (No. 2) Pty. Ltd. and Queensland Titanium Mines Pty. Limited
363M*	Double Island Point		40	Queensland Titanium Mines Pty. Limited
434M†	Baffle Creek	(1)	12	Mineral Deposits Limited
	Baffle Creek	(2)	42	
493M	Archer Bay		832	Tipperary Land and Exploration Corporation and H. A. Bauxiet Australie N.V.
			s.b.	
502M	Palmer River	(1)	168	Frost Enterprises Pty. Limited
	Palmer River	(2)	66	
508M	Mount Morgan		566	Geopeko Limited
			sq. ml.	
645M	North-East of Chaters Towers		28	North Australian Cement Ltd.
			s.b.	
683M	West of Gladstone		21	Darra Exploration Pty. Ltd.
			sq. ml.	
831M	Moreton Island		28	Mineral Deposits Ltd.
877M	South-West of Collinsville		39	Saracen Mining N.L.
884M	North-East of Clermont	(2)	16	Swiss Aluminium Mining Australia Pty. Ltd.
	North-East of Clermont	(3)	50	
			s.b.	
903M§	South of Duchess	(1)	80	Queensland Phosphate Pty. Ltd.
	West of Dajarra	(2)	16	
	South-West of Burketown	(3)	6	
	South-West of Burketown	(4)	32	
	South-West of Burketown	(5)	13	
	South-West of Burketown	(6)	13	
	South-West of Burketown	(7)	12	
	South-West of Burketown	(8)	28	
	North-West of Dobbyn	(9)	118	
972M‡	West of Dajarra		16	Queensland Phosphate Pty. Ltd.
973M‡	South of Duchess		15	Queensland Phosphate Pty. Ltd.
974M‡	South of Duchess		35	Queensland Phosphate Pty. Ltd.
975M‡	South of Duchess		30	Queensland Phosphate Pty. Ltd.
976M‡	South-West of Burketown	(1)	13	Queensland Phosphate Pty. Ltd.
	South-West of Burketown	(2)	13	
	South-West of Burketown	(3)	12	
977M‡	South-West of Dobbyn		28	Queensland Phosphate Pty. Ltd.
978M‡	North-West of Dobbyn		6	Queensland Phosphate Pty. Ltd.
979M‡	South-West of Burketown	(1)	6	Queensland Phosphate Pty. Ltd.
	South-West of Burketown	(2)	32	
980M‡	West of Dobbyn		29	Queensland Phosphate Pty. Ltd.
996M	Westmoreland		70	Queensland Mines Limited
1040M	Gympie		3	Gympie Eldorado Gold Mines Pty. Ltd.
1073M	Julia Creek		80	Australian Aquitaine Petroleum Pty. Ltd.
1082M	North-West of Dobbyn		23	Pacminex (Qld.) Pty. Ltd.
1084M	West of Dobbyn		48	Pacminex (Qld.) Pty. Ltd.
1091M	South of Mackay		15	Pennzoil of Australia Ltd.
1092M	Charters Towers		50	A.O.G. Minerals Pty. Limited
1134M	South-West of Yeppoon		11	Dampier Mining Company
1136M	West of Georgetown		70	Dolphin Exploration Co. Pty. Ltd.
1137M	West of Georgetown		79	Dolphin Exploration Co. Pty. Ltd.
1139M	North-West of Dobbyn		83	Broken Hill South Limited
1144M	South-West of Collinsville		49	Australia—Cities Service Inc.

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974—continued

No.	Locality	Area	Titleholder
		s.b.	
1147M	South of Cooktown	76	Max Holbrook Wood
1154M	North-West of Mount Isa	27	Falconbridge (Australia) Pty. Limited
1155M	South-West of Gunpowder	36	Anaconda Australia Inc.
1159M	South-East of Charters Towers ..	25	Esso Exploration and Production Australia Inc.
1160M	South of Gladstone	4	Otter Exploration N.L.
1165M	Mary Kathleen	100	Aquitaine Australia Minerals Pty. Ltd.
1171M	North-West of Dobbyn	75	Placer Prospecting (Australia) Pty. Ltd.
1174M	North-West of Dobbyn	36	Tricentrol Australia Limited
1184M	South of Sarina	50	Mines Administration Pty. Ltd.
1191M	North-West of Mount Isa	40	Savage Exploration Pty. Ltd.
1195M	South of Cooktown	8	Max Holbrook Wood
1197M	North-West of Burketown	93	Saracen Minerals N.L. and Mount Arthur Molybdenum N.L.
1199M	East of Rockhampton	15	Electrolytic Zinc Co. of Australasia Ltd.
1209M	South of Kuridala	49	I.C.I. Australia Ltd. and Newmont Pty. Ltd.
1210M	South of Kuridala	50	I.C.I. Australia Ltd. and Newmont Pty. Ltd.
1212M	South of Home Hill	50	Otter Exploration N.L.
1214M	Cloncurry	50	Jododex Australia Pty. Ltd.
1222M	South-East of Shelburne Bay	44	Allstate Explorations N.L.
1227M	North-East of Boulia	75	Chevron Exploration Corporation
1228M	North-East of Boulia	75	Chevron Exploration Corporation
1231M	North of Kuridala	13	Dampier Mining Company Ltd.
1232M	West of Yeppoon	49	Electrolytic Zinc Company of Australasia Ltd.
1233M	Kuridala	34	Dampier Mining Company Limited
1234M	North of Mount Isa	50	AGIP Nucleare Australia Pty. Ltd.
1235M	Ravenswood	100	Alliance Minerals Australia N.L.
1240M	Biloela	45	Carpentaria Exploration Co. Pty. Ltd.
1241M	Biloela	24	Carpentaria Exploration Co. Pty. Ltd.
1249M	South of Sarina	33	Australasian Exploration Co. Inc.
1252M	Nebo	100	Pennzoil of Australia Ltd.
1253M	Nebo	96	Pennzoil of Australia Ltd.
1259M	North-West of Rockhampton	50	Esso Exploration and Production Australia Inc.
1264M	East of Camooweal	93	Mines Exploration Pty. Ltd.
1265M	South-East of Dajarra	49	Newmont Pty. Ltd. and Minimp Pty. Ltd.
1266M	South of Kuridala	50	Newmont Pty. Ltd. and Minimp Pty. Ltd.
1267M	West of Bundaberg	8	Otter Exploration N.L.
1268M	Mary Kathleen	100	Carpentaria Exploration Company Pty. Ltd.
1269M	Mary Kathleen	98	Carpentaria Exploration Company Pty. Ltd.
1270M	Mary Kathleen	100	Carpentaria Exploration Company Pty. Ltd.
1271M	East of Camooweal	49	Carpentaria Exploration Company Pty. Ltd.
1272M	North of Stanthorpe	63	Amoco Minerals Australia Co.
1273M	South of Warwick	78	Amoco Minerals Australia Co.
1274M	South-East of Kuridala	100	Amoco Minerals Australia Co.
1275M	South-East of Kuridala	100	Amoco Minerals Australia Co.
1279M	Lawn Hill	95	C.R.A. Exploration Pty. Limited
1280M	North of Lawn Hill	100	C.R.A. Exploration Pty. Limited
1281M	North of Charters Towers	83	A.O. (Australia) Pty. Ltd.
1283M	Richmond	50	Pacminex (Qld.) Pty. Limited, The Oil Shale Corporation (Australia), Aquitaine Australian Minerals Pty. Ltd.

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974—continued

No.	Locality	Area	Titleholder
		s.b.	
1284M	North-East of Mount Isa	43	AGIP Nucleare Australia Pty. Ltd.
1286M	West of Greenvale H.S.	50	Shell Minerals Exploration Aust. Pty. Ltd.
1289M	South of Mount Garnet	(1) 26 (2) 17 (3) 7	A.O. (Australia) Pty. Ltd.
1299M	Mount Perry	50	Dampier Mining Company Limited
1301M	Mount Perry	40	Dampier Mining Company Limited
1302M	North-West of Charters Towers ..	89	Afmeco Pty. Ltd.
1304M	North-West of Cloncurry	5	C.R.A. Exploration Pty. Ltd.
1305M	North-West of Cloncurry	88	C.R.A. Exploration Pty. Ltd.
1307M	Mary Kathleen	5	Laszlo Gyorgy Szabo
1308M	Argentine	36	Bay Exploration Pty. Ltd.
1310M	North of Duchess	100	Aquitaine Australia Minerals Pty. Ltd.
1311M	North-West of Mary Kathleen ..	100	Aquitaine Australia Minerals Pty. Ltd.
1312M	North of Mary Kathleen	100	Aquitaine Australia Minerals Pty. Ltd.
1314M	North-East of Camooweal	100	Aquitaine Australia Minerals Pty. Ltd.
1315M	South-West of Nebo	20	Endeavour Oil Company N.L.
1318M	St. George	100	E. J. Roach and Sons Pty. Ltd.
1322M	North-West of Mount Mulligan ..	49	Mareeba Mining and Exploration Pty. Ltd.
1323M	West of Cloncurry	46	Jododex Auatralia Pty. Ltd.
1325M	North of Mount Oxide	99	Amax Exploration (Australia) Inc.
1326M	Charters Towers	100	A.O. (Australia) Pty. Ltd.
1327M	East of Texas	100	Australian Anglo American Ltd.
1330M	North of Mary Kathleen	80	C.R.A. Exploration Pty. Limited
1331M	North-East of Georgetown	100	Pechiney (Australia) Exploration Pty. Ltd.
1332M	North-East of Georgetown	100	Pechiney (Australia) Exploration Pty. Ltd.
1333M	North-East of Georgetown	50	Pechiney (Australia) Exploration Pty. Ltd.
1334M	South of Selwyn	100	Newmont Proprietary Limited, I.C.I. Australia Limited, Dampier Mining Company
1335M	Rosedale	100	C.S.R. Limited
1336M	North-West of Charters Towers ..	32	Daintree Tin N.L.
1337M	North-West of Burketown	29	Savage Exploration Pty. Ltd.
1338M	North-West of Burketown	38	Savage Exploration Pty. Ltd.
1339M	South-West of Dobbyn	20	Consolidated Gold Fields Australia Ltd.
1341M	Yeppoon	24	Oremco (Aust.) Pty. Ltd.
1343M	North-West of Mary Kathleen ..	40	Anaconda Australia Inc.
1344M	South-West of Dobbyn	28	Anaconda Australia Inc.
1345M	South of Selwyn	99	Newmont Proprietary Limited, I.C.I. Australia Limited, Dampier Mining Company Limited
1347M	North of Kajabbi	95	Union Miniere Development and Mining Corporation Limited
1348M	Duchess	100	Marathon Petroleum Australia Ltd.
1349M	North of Theodore	100	Mines Administration Pty. Limited and A.O. (Australia) Pty. Ltd.
1350M	Theodore	99	Mines Administration Pty. Limited and A.O. (Australia) Pty. Ltd.
1351M	North-East of Weipa	40	Commonwealth Aluminium Corporation Limited
1352M	Mount Leyshon	78	Esso Exploration and Production Australia Inc.
1353M	East of Duchess	100	Amoco Minerals Australia
1354M	Palmer River	100	Paul Rodney Fletcher
1355M	South-West of Miriam Vale	92	Carpentaria Exploration Company
1356M	South-East of Cloncurry	93	Newmont Proprietary Limited, I.C.I. Australia Limited, and Dampier Mining Company Limited

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974—continued

No.	Locality	Area	Titleholder
		s.b.	
1357M	East of Malbon	100	Newmont Proprietary Limited, I.C.I. Australia Limited, and Dampier Mining Company Limited
1359M	Gympie	6	New Gympie Gold Pty. Ltd.
1360M	North of Gunpowder	100	Amax Exploration (Australia) Incorporated
1361M	South of Mount Cobalt	91	Chevron Exploration Corporation
1363M	South-East of Mount Leyshon	100	Esso Exploration and Production Aust. Ltd.
1364M	North-West of Charters Towers ..	100	Urangesellschaft Australia Pty. Ltd.
1365M	West of Rollingstone	94	Urangesellschaft Australia Pty. Ltd.
1366M	North-West of Gunpowder	100	International Nickel Aust. Ltd.
1367M	North of Mount Isa	90	Consolidated Gold Fields (Aust.) Ltd., Mitsubishi Metal Mining Co. Ltd., Mitsubishi Development Pty. Ltd. and Kinsho-Mataichi (Aust.) Pty. Ltd.
1368M	North of Mount Isa	89	Consolidated Gold Fields (Aust.) Ltd., Mitsubishi Metal Mining Co. Ltd., Mitsubishi Development Pty. Ltd. and Kinsho-Mataichi (Aust.) Pty. Ltd.
1369M	North-West of Cloncurry	81	C.R.A. Exploration Pty. Limited
1370M	Kajabbi	32	Union Miniere Development and Mining Corporation Limited
1371M	North of Collinsville	100	A.O. (Australia) Pty. Ltd.
1373M	North of Mount Isa	100	I.M.C. Development Corporation
1374M	North-West of Mount Isa	100	I.M.C. Development Corporation
1375M	North-West of Mount Isa	100	I.M.C. Development Corporation
1376M	North-West of Mount Isa	100	I.M.C. Development Corporation
1378M	North-West and South-East of Mungana	100	Western Mining Corporation Limited
1379M	North-West of Gunpowder	68	Samin Limited
1382M	South of Einasleigh	98	Anaconda Australia Inc.
1383M	Clermont	20	Keith Alexander White
1384M	East of Kuridala	52	C.R.A. Exploration Pty. Limited
1385M	East of Kuridala	48	C.R.A. Exploration Pty. Limited
1389M	North of Cloncurry	100	Chevron Exploration Corporation
1390M	North of Cloncurry	100	Chevron Exploration Corporation
1391M	North-East of Cloncurry	95	Chevron Exploration Corporation
1392M	North-West of Mount Isa	100	Mines Exploration Pty. Ltd.
1393M	Georgetown	100	Dampier Mining Company Ltd.
1394M	Forsayth	49	Dampier Mining Company Ltd.
1395M	South-East of Forsayth	16	Dampier Mining Company Ltd.
1396M	Einasleigh	63	Dampier Mining Company Ltd.
1397M	South-West of Einasleigh	23	Dampier Mining Company Ltd.
1398M	South of Georgetown	47	Urangesellschaft Australia Pty. Ltd.
1399M	Miriam Vale	90	Southern Pacific Petroleum N.L.
1400M	West of Dobbyn	47	Consolidated Gold Fields Australia Limited, Triako Mines N.L. and Buka Minerals N.L.
1401M	Targinie	94	Southern Pacific Petroleum N.L. and Central Pacific Minerals N.L.
1402M	South-West of Charters Towers ..	100	Esso Exploration and Production Australia Inc.
1403M	South-West of Charters Towers ..	100	Esso Exploration and Production Australia Inc.
1404M	North of Mary Kathleen	66	Otter Exploration N.L.
1405M	North-West of Gunpowder	74	Occidental Minerals Corporation of Australia
1406M	North-West of Gunpowder	89	Occidental Minerals Corporation of Australia
1407M	Kilkivan	95	Amoco Minerals Australia Company
1408M	West of Clermont	99	Agip Nucleare Australia Pty. Ltd.
1409M	Palmer River	84	Mareeba Mining and Exploration Pty. Ltd.

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974—continued

No.	Locality	Area	Titleholder
		s.b.	
1410M	North of Mount Isa	26	International Nickel Australia Limited
1411M	South of Forsayth	99	Endeavour Oil Company No Liability
1412M	South-West of Sarina	41	Endeavour Oil Company No Liability
1413M	North of Georgetown	100	Mines Administration Pty. Limited
1414M	South-West of Ingham	65	Endeavour Oil Company No Liability
1415M	South of Kidston	35	Urangesellschaft Australia Pty. Ltd.
1416M	South of Port Alma	82	Dampier Mining Company Limited
1417M	West of Mary Kathleen	100	Australian Hanna Limited
1418M	North-East of Dobbyn	100	Chevron Exploration Corporation
1419M	South-East of Cloncurry	100	Chevron Exploration Corporation
1420M	North-East of Cloncurry	94	Chevron Exploration Corporation
1421M	South-East of Selwyn	89	Chevron Exploration Corporation
1422M	North of Kajabbi	99	Chevron Exploration Corporation
1423M	North-West of Cloncurry	12	Otter Exploration N.L.
1424M	South-West of Bowen	24	Otter Exploration N.L.
1425M	North-West of Cloncurry	71	C.R.A. Exploration Pty. Ltd.
1426M	South-West of Burketown	92	Shell Development (Australia) Pty. Ltd.
1427M	South of Normanton	100	Shell Development (Australia) Pty. Ltd.
1428M	East of Dobbyn	100	Shell Development (Australia) Pty. Ltd.
1429M	North of Julia Creek	100	Shell Development (Australia) Pty. Ltd.
1430M	East of Cloncurry	100	Shell Development (Australia) Pty. Ltd.
1431M	South of Richmond	100	Shell Development (Australia) Pty. Ltd.
1432M	North-East of Boulia	100	Shell Development (Australia) Pty. Ltd.
1433M	West of Palmerville	69	Mining Corporation Exploration N.L.
1434M	Junction of Palmer and Mitchell Rivers	100	Mining Corporation Exploration N.L.
1435M	North of Mary Kathleen	30	Otter Exploration N.L.
1436M	North of Gunpowder	100	Amax Exploration (Australia) Inc.
1437M	South of Georgetown	100	Marathon Petroleum Australia Ltd.
1438M	South of Biloela	100	Esso Exploration and Production Australia Inc.
1439M	North of Mount Isa	92	International Nickel Australia Limited
1440M	North of Kuridala	60	Anaconda Australia Inc.
1441M	North of Cloncurry	100	Chevron Exploration Corporation
1442M	West of Mount Isa	100	Carpentaria Exploration Company Pty. Ltd.
1443M	West of Mount Isa	100	Carpentaria Exploration Company Pty. Ltd.
1444M	West of Ogmore	100	Leonard Henry Corser
1445M	South-West of Ogmore	100	Leonard Henry Corser
1446M	North-West of Ogmore	100	Jeffrey Charles Medworth
1447M	East of Georgetown	100	Pechiney (Australia) Exploration Pty. Ltd.
1448M	Shelburne Bay	100	A.O.G. Minerals Pty. Ltd.
1449M	Mount Leyshon	100	Esso Exploration and Production Australia Inc.
1450M	East of Georgetown	100	Pechiney (Australia) Exploration Pty. Ltd.
1451M	South-West of Bowen	100	Esso Exploration and Production Australia Inc.
1452M	East of Kuridala	86	Amoco Minerals Australia Company
1453M	South-West of Kuridala	50	Falconbridge (Australia) Pty. Ltd.
1454M	South of Selwyn	98	Newmont Proprietary Limited, I.C.I. Australia Limited and Dampier Mining Company Ltd.
1455M	North-West of Charters Towers ..	78	Afmeco Pty. Ltd.
1456M	North-West of Chillagoe	74	Getty Mining Pty. Ltd.

TABLE OF AUTHORITIES TO PROSPECT (EXCLUDING COAL) GRANTED UNDER THE MINING ACT AND CURRENT AT 31st DECEMBER, 1974—continued

No.	Locality	Area	Titleholder
		s.b.	
1457M	North-West of Chillagoe	40	Getty Mining Pty. Ltd.
1458M	South-West of Mount Garnet	49	Getty Mining Pty. Ltd.
1459M	North of Yeppoon	12	Mineral Deposits Ltd.
1460M	North of Yeppoon	25	Dillingham Constructions Pty. Ltd. and Murphyores Incorporated Pty. Ltd.
1461M	Georgetown	65	Southern Cross Exploration N.L.
1462M	North-East of Chillagoe	7	Southern Cross Exploration N.L.
1463M	North of Mungana	81	Urangesellschaft Australia Pty. Ltd.
1464M	North of Mangana	48	Urangesellschaft Australia Pty. Ltd.
1465M	North-West of Mungana	52	Urangesellschaft Australia Pty. Ltd.
1466M	North of Blair Athol	3	Athol James Kerr
1467M	South-East of Selwyn	28	Marathon Petroleum Australia Ltd.
1468M	North-West of Chillagoe	100	Leo Giordano Leoni
1469M	Georgetown	33	Southern Cross Exploration N.L.
1470M	South of Cloncurry	97	Carpentaria Exploration Company Pty. Ltd.

DRILLING DATA, 1974—QUEENSLAND METALLIFEROUS MINES

Company	Locality	Mineral	Exploratory		Blast Hole
			Core	Non-Core	
			Metres	Metres	Metres
Mount Isa Mines Limited	Isa Mine, S.M.L. 5589	Cu, Pb, Ag Kennedy Silkstone	44 522	..	1 154 648
	Hilton Mine	Pb, Zn, Ag	462	287	..
	Quartzite	Pb, Zn, Ag, Cu	1 887	..	..
	Blockade Mine, Argylla Area	Cu, Silica Flux	..	112	..
	Scheelite Lease, Kajabbi	Limestone Flux	..	173	..
Carpentaria Exploration Company Pty. Ltd.	A. to P. 1270M, North of Mary Kathleen	Cu, Pb, Zn, Ag	..	1 063	..
	Bluff Leases, South of Gunpowder	Cu, Pb, Zn, Ag	511	..	..
	Boomerang Leases, North-north-west of Mount Isa	Cu, Pb, Zn, Ag	262	..	..
	Arch Leases, South of Gunpowder	Cu, Pb, Zn, Ag	842	..	..
Gunpowder Copper Limited	Mammoth Mine	Cu	12 552	..	54 607
	Mount Oxide Mine	Cu	2 745	..	..
	A. to P. 1196M, 3 km West of Mammoth	Cu	160	..	..
The Broken Hill Proprietary Company Limited	Westmoreland	U	612	192	..
Chevron Exploration Corporation	A. to P. 1227M, North-east of Boulia	U	14	4 784	..
	A. to P. 1361M, South of Mount Cobalt	U	..	680	..
	A. to P. 1421M, South-east of Mount Cobalt	U	24	680	..
	A. to P. 1389M, North of Cloncurry	U	..	1 227	..
	A. to P. 1390M, North of Cloncurry	U	24	3 224	..
	A. to P. 1391M, North-east of Cloncurry	U	..	1 242	..
	A. to P. 1420M, North-east of Cloncurry	U	23	2 429	..
	A. to P. 1441M, North-east of Dobbyn	U	7	4 129	..
	A. to P. 1422M, North-east of Kajabbi	U	..	1 066	..
	A. to P. 1418M, North-east of Dobbyn	U	2	882	..
	A. to P. 1419M, East of Kuridala	U	..	1 785	..
International Nickel Australia Limited (Joint Venture with Tricentrol Australia Limited)	A. to P. 1174M, North-west of Dobbyn	Cu, Pb, Zn, Ag	..	1 884	..
Falconbridge (Australia) Pty. Limited	A. to P. 1154M, May Downs, North-west of Mount Isa	Geological Information	789	..	..
	Desolation Leases, 29 km North-north-east of Malbon	Cu, Pb, Zn	..	2 322	..
Jododex Australia Pty. Ltd.	A. to P. 1214M, West of Cloncurry	Cu, Pb, Zn, Ag	127	303	..
	A. to P. 1323M, West of Cloncurry	Cu, Pb, Zn, Ag	105	11	..
Newmont Proprietary Limited in joint venture with I.C.I. (Australia) Limited and Dampier Mining Company Limited	A. to P. 1236M, South-east of Lawn Hill	Pb, Zn, Ag	252	..	..
	A. to P. 1210M, South-west of Selwyn	Cu, Au	185	903	..
	A. to P. 1265M, South of Mount Cobalt	Pb, Zn, Ag	139	194	..
	A. to P. 1334M, South-east of Mount Cobalt	Pb, Zn, Ag	227	..	..
	Pegmont Leases, South-east of Mount Cobalt	Pb, Zn, Ag	2 464	2 684	..
Pacminex Pty. Limited	A. to P. 1084M, West of Dobbyn	Cu, Pb, Zn, Ag	..	702	..
	A. to P. 1082M, North-west of Dobbyn	Cu, Pb, Zn, Ag	..	616	..
Newmont Proprietary Limited	A. to P. 1163M, Lawn Hill	Pb, Zn	1 175	..	..
	Georgetown	Gold	219	..	..
Queensland Phosphate Limited	A. to P. 903M (Area 1), South of Duchess	Phosphate	174	14 004	..
	A. to P. 903M (Area 2), West of Dajarra	Phosphate	..	3 965	..
	A. to P. 903M (Area 9), Lady Annie–Lady Jane	Phosphate	..	3 195	..
		Base Metals	2 554	152	..
Saracen Minerals N.L. in joint venture with Mount Arthur Molybdenum N.L.	A. to P. 1197M, Westmoreland	U	..	2 295	..
Shell Development (Australia) Proprietary Limited	A. to P. 1426M, South-west of Burketown	Oil Shale	89	642	..
	A. to P. 1427M, South of Normanton	Oil Shale	68	482	..
	A. to P. 1428M, East of Dobbyn	Oil Shale	82	949	..
	A. to P. 1429M, North of Julia Creek	Oil Shale	54	344	..
	A. to P. 1430M, South of Julia	Oil Shale	..	15	..
Placer Prospecting (Australia) Pty. Limited	Lady Loretta Mine	Pb, Zn	2 512	..	..
	Lady Annie Area	Ag	..	..	..

DRILLING DATA, 1974—QUEENSLAND METALLIFEROUS MINES—continued

Company	Locality	Mineral	Exploratory		Blast Hole
			Core	Non-Core	
			Metres	Metres	Metres
Triako Mines N.L. in joint venture with Vam Limited	Dugald River Leases, South-east of Kajabbi	Cu, Pb, Zn, Ag	..	1 000	..
Koolamara Mining and Development Co. Pty. Ltd.	Robin Mine, East of Mount Isa	Calcite Flux	..	..	33 500
	Mount Hope and Duchess Group	Cu-Silica Flux	..	159	335
Mareeba Mining and Exploration	Irvinebank	Cu	533	..	..
	Palmer River	Cu	..	..	..
P. J. O'Rourke	Georgetown	Various	650	7 791	..
Endeavour Oil Co. Pty. Ltd.	A. to P. 1414M	All	..	1 437	..
Dillingham Mining Co. of Australia	A. to P. 377M, Fraser Island	All	..	32 007	..
Mineral Deposits Ltd.	A. to P. 434M, Gladstone	Rutile, Zi, Ilmenite, Monazite	..	1 739	..
	A. to P. 831M, Moreton Island	All	1 550	..	..
Mount Morgan Limited	Mount Morgan	Cu, Au	..	..	178 716
S. Moroney	Irvinebank	Sn	..	24	..
C. E. and J. E. Wyatt	Irvinebank	Sn	..	152	..
S. D. Smith	Herberton	Sn	30	..	..
Gold Copper Exploration Limited	Sunnymount	Sn	1 250	..	..
Mount Arthur Molybdenum N.L.	Mareeba	W	..	915	..
Central Coast Exploration N.L.	Georgetown	Various	1 168	9 589	..
K. A. L. Hollands	..	Sn	..	15	..
Alliance Minerals Aust. N.L.	Ingham	Cu	122	..	..
A.O.G. Minerals Pty. Ltd.	A. to P. 1092M	..	..	60	..
Afmeco Pty. Ltd.	A. to P. 1302M, 1303M	..	859	345	..
A.O. Australia Pty. Ltd.	A. to P. 1326M	..	400	..	..
Western Mining Corp. Ltd.	A. to P. 1378M	..	..	892	..
Union Miniere Development and Mining Corporation Ltd.	A. to P. 1058M	All	2 622	1 418	..
Eastern Copper Mines N.L.	A. to P. 1058M	All	283	..	..
Agip Nucleare Australia Pty. Ltd.	A. to P. 1234M, A. to P 1284M, Mineral Leases	U	4 667	1 902	..
Amoco Minerals	A's to P's 1275M, 1329M, 1353M and 1452M, South-east and East of Kuridala	Cu, Pb, Zn, Ag	7 370	18 000	..
Anaconda Australia Inc.	A. to P. 1343M, Carlton Hills, North of Mount Isa	Geological Information	233	..	..
	A. to P. 1155M, Redie Creek, North-north-west of Mount Isa	Cu	578	..	..
Aquitaine Australia Minerals Pty. Ltd.	A. to P. 1073M, Julia Creek	Oil Shale and Vanadium	114	2 308	..
	A. to P. 1314M, North-east of Camooweal	Pb, Zn, Ag	..	633	..
	A. to P. 1311M, West of Mary Kathleen	Pb, Zn, Ag	..	300	..
Consolidated Goldfields Australia Limited	A. to P. 1339M, North of Mount Isa	Cu	274	..	..
	A. to P. 1400M, South-east of Gunpowder	Cu	390	..	..
C.R.A. Exploration Pty. Ltd.	A. to P. 1279M, 1280M, Lawn Hills Area	Pb, Zn, Ag	147	1 051	..
	A. to P. 1304M, North-west of Cloncurry	U	..	408	..
	A. to P. 1425M, North-west of Cloncurry	Cu, Pb, Zn, Ag	..	578	..
Savage Exploration Pty. Limited	Cloncurry	U	280	..	..
North Broken Hill and Pegmin Limited	Yappo–Galah Creek	All	914	..	..
Union Miniere Development and Mining Corporation Ltd. in joint venture with Eastern Copper Mines N.L.	Mount Kelly Leases, North-north-west of Mount Isa	Cu, Pb, Zn, Ag	2 338	1 418	..
	A. to P. 1058M, North-west of Mount Isa	Cu	284	..	..

DRILLING DATA, 1974—QUEENSLAND METALLIFEROUS MINES—continued

Company	Locality	Mineral	Exploratory		Blast Hole
			Core	Non-Core	
			Metres	Metres	Metres
Union Miniere Development and Mining Corporation Ltd.	Fairmile Leases, South-east of Cloncurry	Cu, Pb, Zn, Ag	290	107	..
Union Miniere Development and Mining Corporation Ltd. in joint venture with Anaconda Australia Ltd.	Mount Elliot Mine Area, Selwyn ..	Cu, Au ..	2 127	..	..
Pegmin Limited	Mount Isa	All	1 501	..	..
Consolidated Rutile Ltd. ..	North Stradbroke Island	Rutile, Zi, Ilmenite, Monazite	..	72 102	..
Golden Plateau N.L.	Cracow	Au	1 626	5 300	..
Frost Enterprises	Taragoola	Limestone ..	..	..	11 200
Comalco	Mount Garnet	Fluorite ..	281	298	..
Tableland Tin Dredging N.L. ..	Mount Garnet	Sn	..	75	..
Loloma Mining Corporation ..	Irvinebank	Sn	182	4 004	..
Ravenshoe Tin Dredging Ltd. ..	Mount Garnet	Sn	..	193	..
Currumbin Mineral Pty. Ltd. ..	..	All	..	610	..
Associated Minerals Consolidated Ltd.	SML 931, North Stradbroke Island	Rutile, Zi, Ilmenite, Monazite	..	12 156	..
Mount Coot-tha Quarry	Brisbane	All	..	..	92 050
Pine Mountain (Thiess Bros.) ..	Brisbane	All	..	..	15 300
Pine Mountain Quarry (B.C.C.) ..	Brisbane	All	..	..	5 871
Pine Mountain Quarry (Ready Mix Group)	Brisbane	All	..	..	30 000
Vales Quarry (Thiess Bros.) ..	Petrie	All	..	..	500
Stirling Granite Quarry	Brisbane	All	..	..	10 000
North Coast Quarry	Dayboro	All	..	..	23 448
Webster Road Quarry	Brisbane	All	..	..	3 504
Mount Marrow Quarry	Marburg	All	..	..	2 475
Burleigh Quarry (Ready Mix Group)	Burleigh	All	..	500	..
Browns Quarry	Gilston	All	..	..	7 045
Bridge Street Quarry	Toowoomba	All	..	..	4 408
Harlaxton Quarry	Toowoomba	All	..	..	7 000
Coolum Quarry	Coolum	All	..	..	484
Burleigh Quarry (Pioneer Concrete)	Burleigh	All	..	..	6 400
Image Flat Quarry	Nambour	All	..	..	29 977
Australian-Cities Services ..	A. to P. 1144M	All	..	377	..
Esso Australia Ltd.	A. to P. 1159M	All	4 256	1 363	..
Chevron Exploration Corp. ..	A. to P. 1245M, 1248M	All	3 183	..	..
Otter Exploration N.L.	A. to P. 1021M, 1039M, 1057M ..	All	..	350	..
Queensland Nickel Mines Pty. Ltd.	Greenvale	All	..	43 050	..
Department of Mines	Throughout the State	..	30 423	6 531	..
		Totals ..	146 789	291 111	1 671 468

SECTION II—DEVELOPMENT AND PRODUCTION

COPPER, LEAD, ZINC, SILVER

MOUNT ISA MINES LTD.

Production

Production for 1974 as compared with the previous year is summarized below:

ORE MINED

	1974 Tonnes	1973 Tonnes
Copper Sulphides	4 933 400	5 040 800
Lead–Zinc Sulphides	2 207 300	2 210 800
Lead Carbonates	44 700	32 200
Total	7 185 400	7 283 800

ORE MILLED

	1974 Tonnes	1974 Grade %	1973 Tonnes	1973 Grade %
Copper	4 949 215	3·4	2 636 047	3·0
			2 432 977	2·8
Silver, Lead	2 208 124	Ag 150 g/t, Pb 6·4%, Zn 6·3%	2 216 855	Ag 155 g/t, Pb 6·8%, Zn 6·7%
Totals	7 157 339		7 285 879	

NOTE.—Copper ores milled do not include recycle products, e.g. converted slag, reverberatory slag, converter bricks, furnace accretions and low grade copper concentrator products.

PRODUCTS

	1974 Yield kg	1974 Value $A	1973 Yield kg	1973 Value $A
Silver	327 726	34 165 436	301 536	16 490 808
	Tonnes		Tonnes	
Copper	159 460	206 145 104	130 438	161 043 972
Lead	119 381	48 867 419	125 112	37 765 766
Zinc	103 051	55 677 425	108 109	40 109 895
Dross	3 025	977 075	2 638	843 007
		$A345 832 459		$A256 253 448

The total value for 1974 represents an increase of 34·9 per cent compared with 1973.

General Activities

Mining.—Mining statistics for 1974 include:

EXPLORATION DRILLING

	1974 Metres	1973 Metres
Isa Mine—Underground	42 384	29 138
Isa Mine—Underground (miscellaneous)	2 036	3 774
Isa Mine—Surface	122	134
Other—Surface	2 172	708
	46 714	33 754
Hilton Mine	749	886
Total	47 463	34 640

UNDERGROUND DEVELOPMENT

	Metres	Metres
Exploratory and Main Development	46	107
Capital Development	2 501	1 713
Stope Development—Lead	10 539	8 734
Stope Development—Copper	33 018	30 742
Total	46 104	41 296

LONG HOLE PERCUSSION DRILLING

	Metres	Metres
Blasthole	1 154 648	1 090 679
Miscellaneous percussion	12 502	16 546
Total	1 167 150	1 107 225

PRODUCTIVITY

	1974	1973
Tonnes per manshift	14·5	15·2

EXPLOSIVES USAGE

	1974 kg	1973 kg
Total consumption ANFO	3 163 173	3 119 000
Total consumption AN60	540 138	482 000
Explosives used per tonne	0·51	0·50

FILL PLACED

	1974 Cubic Metres	1973 Cubic Metres
Wet fill placed	949 244	655 472
Dry fill placed	1 180 928	684 582
Kennedy Siltstone	470 797	..

The most important mining activities at Mount Isa Mine were as follows:—

Development

A total of 46 104 metres of development was completed during the year, 75 per cent. of this in the copper section of the mine.

Ore Handling System

The No. 4 tipple and crushing system was commissioned in early 1974 following the completion of the ore pass development between 19 Level and 21 Level.

Commissioning took place in the No. 1 System to allow lead to be hoisted through K57 shaft, following the installation of chain controls.

Development preparation has commenced to connect the K57 and F58 shaft sinks. This will allow improvement to be made in the spillage cleaning of K57 shaft, and provide additional emergency water storage capacity.

Ventilation Shafts

Aw84 upcast shaft extension from 15 Level to 17 Level was completed.

U1S upcast shaft was completed to 11 Level and from 13 Level to 19B sub. This shaft is 7·62 metres diameter except for the collar to 196·6 metre depth.

The F10 downcast shaft has been reamed to 2·44 metres diameter by the 81R Raiseborer from the surface to 13 Level.

Fill Development

No fill passes were developed from the surface.

Conveyor installation and extension on 13C sub-level continued in line with fill requirements in the 1 100 orebody.

Copper Development

A total of 33 018 metres was developed in copper areas. The majority of this development was in the 1 100 orebody (30 704 metres).

Primary stope development was completed in 1 200N block and moved to 900N block which is now well advanced.

Development of the 3 300N to 3 700N block was almost completed, for extraction by slot and mass fire.

Development for the 2 800N and 3 000N sub-level caving was continued from 15C sub-level to 17E sub-level.

A footwall exploration drilling drive on 17 Level for the 1 900 orebody was completed.

Lead Development

A total of 10 539 metres was developed in lead areas. The major development area was in 5 orebody 13–15 Level. The haulage development on 15 Level is near completion.

Development continued in 2 and 5 orebodies above 13 Level.

Production—Copper Sulphides

A total of 4 933 000 tonnes of copper ore was produced, a decrease of 0·2 per cent. on the previous year. Major reasons for the decrease were power restrictions during the floods in periods 9 and 10, when production was halved; and an overtime ban imposed by fitters in periods 1 and 2.

Source	000's Tonnes 1974	000's Tonnes 1973
650 Orebody Pillars	250·1	334·0
400 Orebody	308·4	179·2
1 100 Orebody—		
M and O17 stopes	871·2	196·4
MO and S19 stopes	560·9	896·8
MO and T22 stopes	760·4	649·1
Q and U27 stopes	483·2	934·2
R and T29 stopes	..	201·3
O and M14 stopes	680·8	..
S32 stopes	0·9	407·1
T33 and 34 stopes	78·8	..
U24 stopes	165·1	485·2
1 100 orebody development	740·6	693·8
Other development	33·0	65·5
Total	4 933·4	5 040·8

Production—Lead Sulphides

Lead Sulphide production for the year was 2·21 million tonnes and was slightly less than last year's figure. Production was severely restricted in February when the railway line was flooded and stores were limited.

Source	000's Tonnes 1974	000's Tonnes 1973
MICAF 13–11 level	998·8	1 081·5
2 Orebody above 13 level	344·7	474·0
5 Orebody above 13 level	480·6	510·8
5 Orebody below 13 level	55·3	..
7 Orebody Trial stopes	158·5	39·1
Development	169·4	105·4
Total	2 207·3	2 210·8

Open-cuts

Kennedy Siltstone Open-cut (Rock Fill)

Production for the year totalled 1 102,500 tonnes of siltstone crushed with 1 807 000 tonnes of overburden removed. A major modification to the crusher feed system was completed in October.

Black Star Open-cut

42 667 tonnes of lead carbonate ore were mined.

Safety

A total of 131 lost time injuries occurred during the year, one of which was fatal. There were 35 others which were serious and resulted in the loss of 14 days or more.

COMPARISONS

Year	No. of Lost Time Injuries	Serious	Fatal	Average Severity	Average Frequency
1973	132	42	..	3 215	35·0
1974	131	36	1	4 236	33·7

The most prevalent agents of injury were slipping and tripping, falling rock, airborne dust, persons falling from heights, flying objects and falling objects.

Milling

101 007 tonnes of low grade chalcopyrite concentrates were retreated at No. 1 Concentrator. Production commenced in period four 1974–75 and continued until the middle of period seven 1974–75. Retreatment then ceased and labour was reallocated to other concentrator areas.

In addition to low grade concentrates retreatment, stockpiled smelter grade chalcopyrite concentrates and low grade lead concentrates were repulped during periods of concentrate shortage at either the Copper or Lead Smelters.

2 208 124 tonnes of lead-zinc ore was milled during the year at No. 2 Concentrator. Production rates varied from 95 319 tonnes per period to 195 258 tonnes per period, the former figure resulting from a planned production cut back to conserve coal while rail services were cut during the wet season. Milling rates of up to 340 tph were achieved during the year when soft free milling ores were treated.

192 026 tonnes of converter slag were milled at No. 3 Concentrator.

4 949 215 tonnes of chalcopyrite ore were milled at No. 4 Concentrator. Treatment rate was normally 700–780 tonnes per hour dependent upon ore hardness and crushing plant product sizing and ore availability.

Throughput was markedly affected in two periods by planned tonnage reductions for power conservation resulting from coal shortages due to floods.

Smelting

Lead Smelter

Production of crude lead was 119 950 tonnes containing 278 584 kg of silver. Dross production was 3 025 tonnes.

Plant production was severely restricted due to environmental control shutdowns which accounted for 8·65 per cent. of total available time on the Sinter Plant. High sulphur concentrate also contributed to reduced Sinter Plant treatment rates during the first three-quarters of the year.

Plant shutdowns were:

——	Sinter Plant	Blast Furnace
	Days	Days
Planned shutdowns	29·24	27·50
Unscheduled maintenance	15·59	19·21
Concentrate shortage	3·83	3·85
Public Holidays	3	3
Environmental Control	31·56	13·88

In addition, the Blast Furnace operated on reduced blast for 41·30 days due to sinter shortages caused by environmental control.

Copper Smelter

Blister production increased to a high of 161 040 tonnes after deduction of 1 545 tonnes blister in recycled slag.

A total of 47 320 tonnes of purchased ores were smelted including 34 160 tonnes of low grade silica flux.

Environmental control shutdowns increased to: Fluosolids Roaster, 382·95 hours; Converters, 555·2 hours equivalent to 4 130 tonnes blister copper.

Blister copper was stockpiled during the interruption to rail transport at the beginning of the year and the stockpile was eventually eliminated by October.

MILLING OPERATIONS—PRODUCTION SUMMARY

No. 1 COPPER CONCENTRATOR PRODUCTION—1974

Calendar Year	Ore Milled			Smelter Grade Copper Concentrate Produced			Low Grade Copper Concentrator Product			Tailings Produced			Recovery %
	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	
1974—C ..	101 007	20 201	5·3	20 824	4 165	19·2	..	..	..	80 183	16 037	1·71	74·5

1974—C Low Grade Copper Concentrate—5 months only.

1974—
No. 1 High Grade Lead Repulped = 565 tonnes.
No. 1 Low Grade Lead Repulped = 12 343 tonnes.
No. 1 High Grade Copper Repulped = 22 701 tonnes.
No. 1 Copper Spillage = 272 tonnes.

NO. 2 LEAD CONCENTRATOR—1974

Calendar Year	Ore Milled			Lead Concentrate Produced			Zinc Concentrate Produced			Tailings Produced			Recovery %
	Total Tonnes	Tonnes per Calendar Month	Assay % g/t	Total Tonnes	Tonnes per Calendar Month	Assay % g/t	Total Tonnes	Tonnes per Calendar Month	Assay % g/t	Total Tonnes	Tonnes per Calendar Month	Assay % g/t	
1974 ..	2 208 124	184 010	Ag 150 g/t Pb 6·4% Zn 6·3%	256 282	21 357	Ag 1 045 g/t Pb 47·6% Zn 6·3%	197 957	16 496	Ag 121 g/t Pb 1·9% Zn 52·1%	753 885	146 157	Ag 23 g/t Pb 0·8% Zn 1·1%	Ag in Pb Con–80·7 Pb in Pb Con–86·7 Zn in Zn Con–74·4

NO. 3 COPPER CONCENTRATOR PRODUCTION—1974

Calendar Year	Ore Milled			Copper Concentrate Produced			Tailings Produced			Recovery %
	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	
1974—										
A	192 026	16 002	3·0	19 326	1 611	25·7	172 700	14 392	0·47	86·1

A—Converter Slag.

NO. 4 COPPER CONCENTRATOR PRODUCTION—1974

Calendar Year	Ore Milled			Smelter Grade Copper Concentrate Produced			Low Grade Copper Concentrator Product			Tailings Produced			Recovery %
	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	Total Tonnes	Tonnes per Calendar Month	Assay % Cu.	
1974 ..	4 949 215	412 435	3·4	610 743	50 895	26·4	..	..	..	4 338 472	361 539	0·14	96·3

MOUNT MORGAN LIMITED

Production

Production for the year 1974, with comparative figures for the previous year, is summarized below:—

ORE MINED

	1974 Tonnes	1973 Tonnes
Ore Mined	1 050 000	1 216 910
Waste Removed	2 760 000	2 886 970

ORE MILLED (COMBINED MILLS)

	1974	1973
Tonnes milled	1 044 080	1 186 900
Head assay—		
Aug/t	2·37	1·43
Cu %	1·00	0·76
Recovery—		
Au %	66·5	60·3
Cu %	90·4	91·0

PRODUCTS

—	1974		1973	
	Yield	Value	Yield	Value
		$		$
Copper ..	9 745 tonnes	14 033 775	9 370 tonnes	11 682 834
Gold ..	1 963 kg	..	1 538 kg	..
Silver ..	1 517 kg	159 381	1 376 kg	86 258

Sales of pyrite totalled 677 tonnes valued at $16 792.

General Activities

Removal of overburden continued from numbers 2 to 8 benches.

Ore was mined from both Mount Morgan and Sugarloaf sections of the open-cut.

Smelting was carried out during the year in the Flash Smelter.

GUNPOWDER COPPER LIMITED

Production

Production for the year 1974 with comparative figures for the previous year, is summarized below:—

ORE MINED

1974 Tonnes	1974 Grade %	1973 Tonnes	1973 Grade %
284 067	2·64	297 082	2·85

ORE MILLED

	1974 Tonnes	1974 Grade %	1973 Tonnes	1973 Grade %
Copper Ores ..	281 114	2·64	297 082	2·85

PRODUCTS

—	1974		1973	
	Yield	Value	Yield	Value
	Tonnes	$	Tonnes	$
Copper	6 140	5 759 500	6 908	7 200 000

General Activities

Mining.—Mining statistics for 1974 include:

	Exploration Drilling
Mammoth Mine	5 970 metres
	Underground Development
Mammoth Mine—	
Horizontal and decline ..	3 157 metres
Raises	408 metres
Total	3 565 metres
	Long Hole Percussion Drilling
Mammoth Mine—	
Stoping	54 607 metres

Underground Development

Underground development continued at the Mammoth Mine with the access decline extended to 262 metres below the portal elevation.

Production

Ore was produced from the following sources:—

	tonnes
Still Stripping	34 311
Stoping	143 996
Development	105 760
	284 067

Explosives Usage

Mammoth—

	kg
AN 60	110 400
AN FO	165 000
Explosives used/tonne	1·03

General Remarks

Production and development were seriously affected by floods and fuel shortages during the early part of 1974.

SMALL MINES

The number of small mines operating in the Mount Isa and Cloncurry Mining Districts again increased. During the year 88 mines produced 21 384 dry tonnes of copper ores averaging 4·5 per cent Copper and realized a gross payable value at Isa Mines' smelter of $1 285 546. Four mines produced copper precipitate weighing 24·02 tonnes with a gross value of $26 946.

BAUXITE

The Production statistics from the Commonwealth Aluminium Corporation Ltd. at Weipa were as follows:—

	tonnes
Ore treated	12 357 208
Yield	9 267 906

Value of bauxite produced based on a notional value of $5·25/tonne, $48 656 507.

Exploratory drilling (auger), 14 182 metres.

Additional major plant commissioned included No. 4 beneficiation plant, No. 2 calcination plant and No. 3 Andoom feeder.

RUTILE, ZIRCON, MONAZITE

Production from various sources was as follows:—

Source of Production	Tonnes Sand Processed	Rutile	Production Value	Zircon	Production Value	Monazite	Production Value
		Tonnes	$	Tonnes	$	Tonnes	$
Associated Minerals Consolidated Ltd.	20 776 616	34 513	4 662 681	20 458	1 391 756	..	..
Consolidated Rutile Ltd.	10 790 085	60 399	10 637 823	65 360	6 794 396	..	..
Cudgen R.Z. Ltd.	355 500	11 370	2 058 856	14 957	1 589 423	..	..
Currumbin Minerals Pty. Ltd.	156 000	1 151	338 400	1 336	262 000	..	..
Queensland Titanium Mines Pty. Ltd.	5 230 515	15 060	3 181 124	10 883	2 023 367	27·35	3 420
Totals	37 308 716	122 493	20 878 884	112 994	12 060 942	27·35	3 420

STONE PRODUCTION FROM GAZETTED QUARRIES

Production from various sources was as follows:—

Source of Production	Mined	Value
	Tonnes	$
Cairns Division—		
Bohle	340 000	1 270 000
Roseneath	95 000	380 000
J. R. Stanley	12 750	27 706
Cordelia	15 055	91 038
Smithfield	64 310	187 110
Henly's Hill	84 768	102 600
Saltwater Creek	6 173	28 245
Palmerston	82 280	149 877
Sub-Total	700,336	2 236 576
Rockhampton Division—		
Coastal Crushers	50 000	125 000
Mount Bassett	22 305	55 763
Nerimba	159 000	397 500
Red Hill	60 000	150 000
Tandy	86 093	215 233
Kings Beach	23 761	59 402
Lieschke	6 148	15 370
Sub-Total	407 307	1 018 268
Brisbane Division—		
Burleigh	85 000	280 000
Bridge Street (Toowoomba)	194 000	360 061
Coolum	15 072	21 151
Image Flat (Nambour)	414 267	684 714
Mount Coot-tha	431 237	396 052
Pine Mountain (City Council)	309 038	283 823
Pine Mountain (Ready Mix Group)	300 000	984 000
Stirling Granite	100 000	327 000
Harlaxton (Toowoomba)	100 000	180 000
Bli Bli Road (Nambour)	98 570	141 280
Mount Marrow Blue Metal	96 086	200 195
Webster Road	54 492	98 526
North Coast Quarry	373 640	518 504
Gilston	120 000	391 000
Sub-Total	2 691 402	4 866 306
Total	3 799 045	8 121 150

NOTE.—All values for Rockhampton Division based on an assumed value of $2.50/tonne.

LIMESTONE, DOLOMITE, MARBLE, ETC.

Production from various sources was as follows:—

Source of Production	Product	Mined	Value
		Tonnes	$
Mount Isa Division—			
Koolamara Mining Co.	Limestone	56 555	402 049
N. Shaw	Limestone	16 434	93 223
Sub-Total	..	72 989	495 272
Cairns Division—			
Grotty Lime Works	Limestone	3 654	69 000
North Australian Cement Ltd.	Limestone	331 149	385 855
Calcium Products	Limestone	12 052	165 378
Sub-Total	..	346 855	620 233
Rockhampton Division—			
Ambrose Limeworks, Ambrose	Limestone	1 876	30 016
Central Queensland Cement	Limestone	206 726	723 544
Frost Enterprises	Limestone	42 108	76 560
Commonwealth Aluminium Corporation Limited	Limestone	128 253	461 710
Bosworths	Limestone	819	410
Ambrose Limeworks Marmar	Limestone	10 200	163 800
Industrial Minerals, Ulam	Limestone	2 855	42 593
Inkerman Lime, Ayr	Limestone	2 974	15 511
Sub-Total	..	395 811	1 514 144
Brisbane Division—			
Tamaree Lime Works	Limestone / Serpentine	15 497	125 976
Marbarete Co. Pty. Ltd.	Limestone	704	20 204
Flinders Dolomite Pty. Ltd.	Dolomite	9 133	100 463
Australian Gypsum Ltd.	Perlite	2 061	22 671
John Montgomery and Sons	Sandstone (Facing stone)	225	3 465
Stanthorpe Mining Co. Ltd.	Limestone	3 970	68 684
Didcot Lime Co. Pty. Ltd.	Limestone	1 042	9 376
Runge Quarries	Limestone	7 280	57 104
Industrial Minerals Co. Pty. Ltd.	Diatomite	650	1 300
Sub-Total	..	40 562	409 243
Total	..	856 217	3 038 892

TIN

Production from various sources was as follows:—

Source of Production	Cu Metres /Tonnes Ore Treated	Concentrate	Value
	cu metres	Tonnes	$
Cairns Division—Alluvial Production—			
Ravenshoe Tin Dredging Ltd.	1 705 220	351·9	1 390 737
Tableland Tin Dredging N.L.	2 072 380	567·5	2 149 760
R. N. Redcliffe and Co.	137 700	47·2	153 000
E. G. Fitzgerald and Party	..	35	98 467
Plateau Tin Exploration	..	23·4	70 500
Small Mines	..	269·60	823 827
Sub-Total	..	1 294·60	4 686 291
Lode Production—	tonnes		
Loloma Mining Corporation N.L.	48 805	843·4	2 262 000
Gold Copper Exploration Ltd.	2 972	59·3	157 950
Small Mines	7 752	103·0	461 047
Sub-Total	59 529	1 005·7	2 880 997
Brisbane Division—			
Small Mines (Stanthorpe)	..	43·3	147 284
Total	..	2 343·6	7 714 572

SILICA

Production from various sources was as follows:—

Source of Production	Product	Mined	Value
		Tonnes	$
Mount Isa Division—			
Kalkadoon Mining and Letts	Silica Flux	3 913	27 523
Kalkadoon Mining and Letts	Silica Flux	14 005	102 311
Blockade	Silica Flux	30 850	202 602
Hardway	Silica Flux	11 598	62 917
Lady Hall	Silica Flux	22 940	187 937
Rosebud No. 2	Silica Flux	1 614	6 592
Small Mines	Silica Flux	414	3 273
Sub-Total	..	85 334	593 155
Cairns Division—			
Cape Flattery Silica Mines Pty. Ltd.	Silica Sand	453 221	1 468 812
R. Stanley	Silica Sand	12 500	27 706
Ryan and Others	Silica Sand	1 587	2 777
Sub-Total	..	467 308	1 499 295
Rockhampton Division—			
T. J. Madden	Silica Sand	135	675
Tall Ingots Pty. Ltd.	Silica Sand	1 500	1 500
Sub-Total	..	1 635	2 175
Brisbane Division—			
A.C.I. Raw Materials (Qld.)	Silica Sand	128 360	654 656
Riverside Coal Transport Co. Pty. Ltd.	Silica Sand	99	278
Moreton Tug and Lighter Co. Pty. Ltd. (Stradbroke Island)	Silica Sand	3 612	3 612
Moreton Tug and Lighter Co. Pty. Ltd. (Moreton Bay)	Silica Sand	7 745	3 253
Sub-Total	..	139 816	661 799
Total	..	694 093	2 756 424

MAGNETITE

Steetley Australasia Pty Ltd reported the following production statistics at their operations at Biggenden.

	Tonnes
Overburden removed	314 428
Magnetite consigned	19 020
Bismuth produced at 5% grade	66

NOTE.—The bismuth produced was stockpiled at the mine. There were no sales of bismuth during 1974.

CLAYS, SHALES, BENTONITE

Production from various sources was as follows:—

Source of Production	Product	Mined	Value
		Tonnes	$
Cairns Division—			
North Australian Cement Ltd.	Clay	47 532	10 927
Clay Industries	Clay	24 144	39 924
Northern and Pipe Co. Pty. Ltd.	Clay	3 886	3 048
Sub-Total	..	75 562	53 899
Rockhampton Division—			
Central Queensland Cement Pty. Ltd.	Clay	27 150	43 394
Kalapa Brick Works	Clay	5 700	6 270
Keppel Brick Works	Clay	11 952	19 169
A. R. Porter	Shale	165	424
Burnett Brickworks Pty. Ltd.	Clay	5 012	9 268
Clabrick Pty. Ltd.	Clay	7 930	16 723
Small Producers	Clay	*20 000	*26 400
Sub-Total	..	72 209	121 648
Brisbane Division—			
Queensland Cement and Lime Co.	Clay	30 300	62 210
Oxley Brick Works Pty. Ltd.	..	28 595	28 595
Wunderlich Ltd.	Clay	9 381	9 381
Cooroy Brick Works Pty. Ltd.	Clay	41 271	28 040
Brickworks Ltd.	Clay	173 197	173 197
N. H. Roots	Bentonite	127	7 596
P.G.H. Industries Limited	Clay	41 271	28 040
Brittains Bricks and Pipes Limited	Clay	208 668	233 942
M.L.A. No. 64 (Margric)	Bentonite	107	2 140
Nanango Brickworks	Clay	295	2 153
Continental Enterprises Pty. Ltd.	Clay	4 300	1 505
Bjelke Petersen Enterprises Pty. Ltd. and R. E. Black	Kaolin Clay	2 084	37 540
Earthenware Pipes Pty. Ltd.	Clay	3 948	7 357
Small Producers	Clay	24 461	30 947
Sub-Total	..	568 005	652 643
Total	..	715 776	828 190

* Estimated Values.

GEMSTONES

Sapphires

No production figures were reported for 1974. The intense activity of 1973 extended into 1974, but a fall in the price (said to be due to over-production) caused a decline towards the end of the year.

No reliable figures of employment were available but estimated employment fell from approximately 400 in 1973 to 350 in 1974.

Estimates of value of production, by those associated with the industry, range from $5 000 000 to $25 000 000.

Opals

The estimated value of opal production in Far Western Queensland is conservatively estimated at $602 000.

CHRYSOPRASE

Reported production of chrysoprase as follows:—

	Mass Recovered	Value
	kg	$
Messrs Kayes and Lenz	46	46 942
Capricornia Mineral Company	8 981	
Total	9 027	46 942

GOLD

Golden Plateau N.L.

Production

Production for the year 1974 with comparative figures for the previous year, is summarized below.

ORE MINED

1974	1973
Tonnes	Tonnes
34 551	33 936

ORE MILLED

1974	1973
Tonnes	Tonnes
..	33 936

PRODUCTS

	1974		1973	
	Yield	Value	Yield	Value
	kg	$	kg	$
Gold	303·28	290 207	306·6	729 287
Silver	551·46	56 854	696·7	40 248
Total ..	..	$347 061	..	$769 535

Small Mines

Other than the production from Mount Morgan mine, the total production of gold from small mines in the State was insignificant.

WOLFRAM, MOLYBDENITE

Production of wolfram concentrates from R.B. Mining Pty. Ltd. declined by 25·7 per cent. to 157·3 tonnes. Ore production amounted to 117 043 tonnes at a grade of 0·134 per cent. The estimated value was $512 250.

At Wolfram Camp, Mount Arthur Molybdenum N.L. treated 1 100 tonnes of ore for a yield of 21 tonnes of WO3 concentrates and 6 tonnes of MoS2 concentrates together valued at $57 800.

SALT

Reported production of salt was as follows:—

	Mined	Value
	Tonnes	$
Central Queensland Salt Industries Limited I.C.I. (Australia) Ltd.	25 119 56 630	480 684
Total	81 749	480 684

NICKEL

Queensland Nickel Pty. Ltd.

Construction of all mine buildings, maintenance facilities, crushing plant, conveying, stacking and reclaiming facilities and train loading facilities were completed and commissioned during the year.

During the year approximately 3 694 000 tonnes of overburden were removed from the ore bodies. During the last 6 months of the year 432 000 wet tonnes of ore were excavated to windrows by dragline and 116 000 wet tonnes of soft ore were extracted by scrapers from the surface of the limonite orebody.

Operation of the railway link to Yabulu commenced on 7th August, 1974, and by the end of the year, 223 000 wet tonnes of ore had been crushed at the mine and 229 000 wet tonnes had been railed to Yabulu.

URANIUM

There was no production or exploration at Mary Kathleen mine during the year. Re-commissioning of the site commenced on 1st August, 1974, with the object of achieving full production by the end of 1975. Basic plant site facilities were overhauled.

PHOSPHATE

QUEENSLAND PHOSPHATE LIMITED

Area No. 1—Duchess

General Activities—

Work at the Duchess site included diamond drilling, rotary percussion drilling, rock excavation, ore hauling and other pre-production work.

EXPLORATORY DRILLING

	metres
Diamond drilling	402·3
Rotary percussion drilling	14 998·0
Total	15 400·3

EXCAVATION WORK

Twelve separate excavations were commenced to expose phosphatic beds for geological investigations. Some 5 790 tonnes of rock phosphate were removed from one excavation and stockpiled.

PREPARATION OF BULK ORE SAMPLES

Rock phosphate was transported to Mount Isa for treatment in a custom crushing and screening plant. Two size ranges of screened product were produced and 1 000 tonnes was shipped to Japan. An additional 550 tonnes of ore, "as mined", was transported to Wallaroo, South Australia for plant scale testing for the manufacture of superphosphate.

OVERBURDEN REMOVAL

By the end of 1974 some 1 010 000 tonnes of overburden had been removed from above the phosphate bed to facilitate production of phosphate rock in 1975.

PRELIMINARY WORK

Planning and surveying was commenced during the year on a proposed rail link from the mine site to Bungalien and on mine haul roads; there was evaluation of groundwater resources for both domestic and industrial purposes, an investigation of a proposed townsite and there was an investigation of a crushing, washing and screening plant.

Area No. 2—Ardmore

General Activities—

Work in the Ardmore area included rotary percussion drilling and excavating into rock phosphate.

EXPLORATORY DRILLING

Rotary percussion drilling, 3 965·0 metres

EXCAVATION WORK

Six excavations into rock phosphate were completed to expose the phosphate beds.

Area No. 9—Lady Annie, Lady Jane

General Activities—

Field work included diamond drilling, rotary percussion drilling, geophysical testing, excavating into rock phosphate, phosphate hauling and operating of the pilot plant.

EXPLORATORY DRILLING

	metres
Diamond drilling	2 554·3
Rotary percussion pre-collaring drilling	151·7
Rotary percussion drilling	3 195·4
Total	5 901·4

EXCAVATION WORK

Two excavations were completed, one each at Lady Annie and Lady Jane to provide rock phosphate for use in the pilot flotation plant. Approximately 10 000 tonnes of rock phosphate were stockpiled at the excavations.

PILOT FLOTATION PLANT

Approximately 14 500 tons were hauled from various stockpiles to the flotation plant where 1 550 tonnes of phosphate concentrate were produced which was then trucked to Mount Isa railhead for despatch to the port and overseas consumers.

SECTION III—EMPLOYMENT

The number of persons employed in metalliferous mining in 1974, was 11 408, a decrease of 101 compared with the previous year. In gazetted quarries (including clay pits) 420 persons were employed which was 110 greater than the previous year. Employment in sewer construction was lower at 1 823 due to completion of large projects in the Brisbane Division.

NUMBERS OF PERSONS EMPLOYED IN CONNECTION WITH MINES, MILLS, TREATMENT WORKS, QUARRIES AND SEWERS UNDER CONSTRUCTION, UNDER THE MINES REGULATION ACTS 1974

Classification	Mount Isa Division	Cairns Division	Rockhampton Division	Brisbane Division	Total State
Mines	2 300	448	678	425	3 851
Mills	255	313	110	223	901
Smelting and Metallurgical Works	344	6	128	6	484
Workshops	988	341	341	232	1 902
Miscellaneous on Surface	2 587	*1 125	*172	386	4 270
Total—1974	6 474	2 233	1 429	1 272	11 408
1973	7 137	1 761	1 435	1 176	11 509
Quarries (including clay pits)	..	82	59	279	420
Sewer (under construction)	12	226	243	1 342	1 823

* Including persons employed on Authorities to Prospect.

NOTE.—Cairns Division Total Employment for 1973, adjusted to include those for former Charters Towers Division.

SECTION IV—ACCIDENTS AND SAFETY

Statistical data and tables in this section include—

Table 1—Classification of all accidents.

Table 2—Detailed classification of all accidents.

Table 3—Comparable table of accidents in metalliferous mines, mills, smelters and other surface work for the past ten years and the total accidents recorded since 1879 classified as to cause (over 14 days disablement).

Table 4—Frequency and severity rates for all lost time accidents in metalliferous mines (S.A.A. Code CZ. 6–1966).

Table 5—Frequency and severity rates for all lost time accidents in sewers under construction.

Table 6—Frequency and severity rates for all lost time accidents in quarries.

Table 7—Classification of accidents (over 14 days disablement) in sewers under construction.

METALLIFEROUS MINES

During 1974, there were 737 lost time accidents of which 2 were fatal and 170 lost time accidents involved more than 14 days disablement.

Brief details of the fatal accidents are as follows:—

(1) On 18th February, 1974, John Robert Sergent sustained fatal injuries after he apparently fell into the cavity above No. 3 feeder in the crude ore tunnel and his body was carried along the conveyors, through the crusher and other parts of the plant. This accident occurred in the vicinity of the Beneficiation Plant at the Weipa operation of the Commonwealth Aluminium Corporation Limited.

(2) On 28th June, 1974, Edward James Hammond was operating an ST 2B unit on 15 level of Mount Isa Mine when he apparently lost control of the unit and collided with the wall in the X70 Stores Handline Area. Hammond sustained head injuries from which he died on 3rd July, 1974.

Death Rate

The death rates per 1 000 persons employed in metalliferous mines during 1974 are given below together with the relevant figures for 1973 as a comparison.

	1974	1973
Metalliferous mines	0·26	·27
Mills, smelters and other surface works	0·13	·26
All mines mills and works	0·18	·26

SEWERS UNDER CONSTRUCTION

A total of 94 lost time accidents were reported of which 68 involved more than 14 days disablement. There were no fatal accidents.

QUARRIES

A total of 26 lost time accidents were reported.

INQUIRIES

Mines

Three inquiries were held under the provisions of section 42 (1) of the *Mines Regulation Act* 1964–1968 and all were into the nature and cause of fatalities.

They were held in respect of the following:—

(1) Kenneth Lyle Hungerford; killed on the Tinaroo Alluvial Tin Mine near Mareeba on 7th November, 1973.

(2) John Robert Sergent; killed at Weipa Mine on 18th February, 1974.

(3) Edward James Hammond; killed at Isa Mine on 28th June, 1974.

Sewers

No inquiries were held in connection with sewer accidents.

Quarries

No inquiries were held in connection with quarry accidents.

OCCURRENCES

There were 32 occurrences reported during the year as required by section 39 (5) of the *Mines Regulation Act* 1964–1968. Brief details are given below—

(a) *Winding* (7).—These included an overwind; a damaged rope; a service cage caught in the detaching bell while being tested; a skip jammed; a cage hit a rail which protruded into the shaft; and a cage entered the top overwind switch as a result of a faulty depth indicator caused by a current surge.

(b) *Falls of Ground* (3).—These included two slumps of hydraulic backfill caused by a failure of the fill bulkheads and one major rock fall as a result of ring firing.

(c) *Fires* (16).—There were three fires reported in diesel vehicles; twelve in locomotives; batteries and charging apparatus; and 1 resulting from an oxy-gas cutting operation.

(d) *Accidental Detonation of Explosives* (6).—These included the premature ignition of a bomb due to movement of the rill; the detonation of a primer caused by static discharge, while it was being inserted into the end of a charging hose; a premature detonation while drilling into a butt; a detonation of XACTEX in an explosive bag after the bag was hit by a piece of rock projected by the blast; a premature detonation of detonators caused by pieces of rock projected by the explosion of an ANFO bomb; and the premature firing of two faces caused by lightning discharge through the mains firing cable.

TABLE 1

METALLIFEROUS MINES

DEATHS AND INJURIES—MINES, MILLS, &c.

Fatal and serious injuries reported under section 39.
(Over 14 days' disablement)

Cause of Accident	Killed	Seriously Injured	Number of Persons Employed	Percentage Casualties
1. Below Ground—				
Accidental explosions and blasting accidents	..	2	..	..
Explosions of gas ..	..	..	..	..
Falls of ground ..	..	8	..	..
Falling down shafts ..	..	..	..	..
Material falling down shafts	..	..	..	..
Other shaft accidents ..	..	2	..	..
Ladder accidents ..	..	1	..	..
Accidents in winzes, raises and passes ..	..	2	..	..
Machinery accidents ..	..	4	..	..
Falls from staging, &c.	..	4	..	..
Truck and wagon accidents	1	4	..	..
Miscellaneous	..	20	..	..
Total	1	47	3 851	1·22
2. Above Ground—				
Machinery accidents (only machinery connected with mines)	..	4	..	..
Miscellaneous (brace, &c. in connection with operation about mine only)	1	67	..	..
Total	1	71	6 172	1·15
3. Smelters, mills, batteries or other metallurgical works	..	52	..	..
Total	..	52	1 385	3·75
Grand Total	2	170	11 408	1·49

TABLE 2

ALL LOST-TIME ACCIDENTS, METALLIFEROUS MINES FOR YEAR ENDED 31st DECEMBER, 1974

Detailed Classification of Accidents

Nature of Injuries	Occupation														
	Underground								Surface						
	Boggers and Truckers	Transport	Shaftmen and Timbermen	Machinemen and Facemen	Pipe Fitters and Platelayers	Platmen and Bracemen	Miscellaneous	Total	Mills	Smelters	Workshops	Transport	Riggers	Miscellaneous	Total
Contusions, Abrasions	3	2	2	29	1	..	7	44	19	20	34	12	6	40	131
Cuts and Lacerations ..	5	1	4	24	..	..	1	35	18	8	25	5	1	21	78
Sprains	4	2	3	11	1	..	1	22	9	2	12	5	3	14	45
Strains and Jars ..	2	4	3	16	4	1	5	35	15	8	28	17	1	36	105
Dislocations	..	..	..	2	..	..	1	3	1	1	1	..	..	2	5
Fractures	..	2	2	9	2	..	2	17	1	3	13	1	..	8	26
Burns and Scalds ..	..	..	..	1	..	..	..	1	5	8	21	..	1	3	38
Septic Infections ..	..	..	..	2	1	..	..	3	2	..	6	2	..	6	16
Amputations	..	..	..	1	..	..	..	1	..	..	1	..	..	..	1
Concussions	1	..	..	..	..	..	..	1	..	..	..	..	..	1	1
Internal Injuries ..	..	..	..	2	..	..	1	3	..	..	1	1	..	..	2
Multiple Injuries ..	..	1	5	13	..	..	4	23	4	5	4	2	..	5	20
Fumes and Dust ..	1	..	..	3	..	..	..	4	2	2	4	..	..	..	8
Rashes and Boils ..	..	..	..	2	..	..	..	2	2	..	3	..	..	..	5
Foreign Bodies ..	2	4	..	12	..	..	2	20	4	4	18	3	..	8	37
Electric Shock	..	..	..	1	..	..	..	1	2	..	..	..	..	..	2
Fatal	1	..	..	..	..	..	..	1	..	..	..	1	..	..	1
Total	19	16	19	128	9	1	24	216	84	61	171	49	12	144	521
Percentage	8·8	7·4	8·8	59·3	4·2	0·5	11·1	100·0	16·1	11·7	32·8	9·4	2·3	27·6	100·0

TABLE 2—continued

ALL LOST-TIME ACCIDENTS, METALLIFEROUS MINES FOR YEAR ENDED 31st DECEMBER, 1974—continued

Detailed Classification of Accidents—continued

Nature of Injuries	Injured Member														Total
	Hand	Fingers	Arm	Leg	Foot	Toes	Head	Chest	Stomach	Multiple Shock	Eyes	Back	Shoulder	Thigh	
Contusions, Abrasions	20	23	14	37	28	4	7	7	2	8	2	10	4	9	175
Cuts and Lacerations	25	33	14	14	5	..	11	..	..	2	4	..	1	4	113
Sprains	2	2	4	28	10	..	1	..	2	..	..	14	4	..	67
Strains and Jars	3	3	5	18	6	..	9	1	3	3	..	78	10	1	140
Dislocations	..	2	2	1	1	..	..	..	..	..	..	..	1	1	8
Fractures	6	11	6	..	5	5	..	4	..	3	..	1	..	2	43
Burns and Scalds	6	1	3	1	15	..	2	..	..	1	10	..	..	..	39
Septic Infections	2	6	1	7	3	..	..	..	..	..	..	..	..	..	19
Amputations	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2
Concussions	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2
Internal Injuries	..	..	..	..	..	..	1	1	3	..	..	..	..	..	5
Multiple Injuries	2	6	3	6	2	1	2	..	..	21	..	..	..	..	43
Fumes and Dust	..	..	..	..	..	..	..	..	2	3	7	..	..	..	12
Rashes and Boils	1	..	1	..	3	1	1	..	..	..	..	..	..	..	7
Foreign Bodies	1	..	2	..	..	..	1	..	..	..	53	..	..	..	57
Electric Shock	..	..	..	..	..	..	..	..	..	3	..	..	..	..	3
Fatal	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2
Total	68	89	55	112	78	11	38	13	12	45	76	103	20	17	737
Percentage	9·2	12·1	7·5	15·2	10·6	1·5	5·2	1·8	1·6	6·1	10·3	14·0	2·7	2·3	100·0

TABLE 3

METALLIFEROUS MINES AND ORE REDUCTION WORKS, &c., QUEENSLAND

Table Showing Number of People Killed and Injured—1879 to 1974

Causes of Accidents	Classified as to Cause of Accident																							
	1879 to 1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		Total	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Ladder Accidents	18	108	..	2	..	1	..	..	..	3	..	2	..	1	..	1	..	2	..	1	..	1	18	122
Falling Down Shafts	128	119	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..	..	..	..	..	130	121
Material Falling, &c.	54	226	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	..	54	230
Gases in Shafts and Winzes	12	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	13	1
Other Shaft Accidents	52	337	..	5	..	1	..	..	..	3	..	2	..	1	..	5	1	14	..	1	..	2	53	371
Accidents in Winzes, Raises and Passes	26	182	..	5	..	2	1	2	1	2	..	1	1	3	..	1	..	..	..	14	..	2	29	214
Falls of Earth and Rock	274	1 330	1	9	2	10	..	6	1	11	..	10	..	1	4	9	..	9	..	4	..	8	282	1 407
Accidental Explosions and Blasting Accidents	191	472	..	3	..	1	..	2	..	2	1	3	1	5	1	1	..	1	..	2	..	2	194	494
Machinery Accidents	29	500	..	5	3	16	1	16	..	13	1	11	1	28	1	13	..	6	..	2	..	4	36	614
Explosions of Gas	12	6	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	7
Falls from Brace, Staging, &c.	13	155	1	1	..	2	..	..	..	..	..	..	..	1	..	1	..	1	..	12	..	4	14	177
Wagon Accidents	16	431	..	7	1	6	..	12	1	17	..	7	..	3	..	10	1	15	..	18	1	4	20	530
Inundation of Water	8	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	3
Miscellaneous	56	2 862	1	31	5	83	..	23	..	24	..	43	1	43	2	58	..	8	..	..	..	20	65	3 195
Surface Works	74	3 827	..	108	1	21	..	68	1	76	2	57	1	26	2	39	5	102	3	135	1	123	90	4 582
Total Killed	963	..	3	..	12	..	2	..	5	..	4	..	6	..	11	..	7	..	3	..	2	..	1018	..
Total Injured	..	10 557	..	179	..	143	..	129	..	153	..	136	..	113	..	139	..	158	..	191	..	170	..	12 068

TABLE 4

ACCIDENTS METALLIFEROUS MINES

Frequency and Severity Rates (S.A.A. Code CZ.—6—1966)

Key Factors and Rates	Mount Isa Division	Cairns Division	Rockhampton Division	Brisbane Division	All State
Total Hours of Exposure	12 844 000	4 466 000	2 720 000	2 598 459	22 628 459
Total Days lost (including time changes)	19 112	9 170	1 940	1 594	31 816
Total lost-time accidents	302	129	166	140	737
Frequency Rate	23·5	28·9	61·0	53·9	32·5
Severity Rate	1 488	2 053	713	613	1 406

TABLE 5

ACCIDENTS SEWERS UNDER CONSTRUCTION

Frequency and Severity Rates (S.A.A. Code CZ.—6—1966)

Key Factors and Rates	Mount Isa Division	Cairns Division	Rockhampton Division	Brisbane Division	All State
Total hours of exposure	24 519	452 000	382 000	2 026 391	2 884 910
Total days lost (including time changes)	..	2	198	1 325	1 525
Total lost-time accidents	..	1	25	68	94
Frequency Rate	..	2·2	65·4	33·6	32·6
Severity Rate	..	4·4	521	654	529

TABLE 6

ACCIDENTS QUARRIES

Frequency and Severity Rates (S.A.A. Code CZ. 6–1966)

Key Factors and Rates	Mount Isa Division	Cairns Division	Rockhampton Division	Brisbane Division	All State
Total hours of exposure	..	164 000	117 000	437 568	718 568
Total days lost (including time changes)	..	..	107	430	537
Total lost-time accidents	..	..	15	11	26
Frequency Rate	..	..	128	25·1	36·1
Severity Rate	..	..	915	983	747

TABLE 7

SEWERS UNDER CONSTRUCTION

Accidents Causing more than 14 days Disablement

Underground and Trenches	Killed	Injured	Surface	Killed	Injured
Falls of earth and rock	..	2	Machinery Accidents	..	11
Slipping and Falling	..	3	Slipping and Falling	..	7
Dermatitis and Septic	..	..	Handling Materials	..	17
Handling Timber	..	4	Dermatitis and Septic	..	..
Explosives and Blasting	..	..	Miscellaneous	..	12
Miscellaneous	..	12			
Total	..	21	Total	..	47

SECTION V—GENERAL

STAFF

(As of 31st December, 1974)

Assistant State Mining Engineer and Assistant Chief Inspector of Mines—W. L. Stapleton.

Senior Inspector of Mines—A. J. Saunders.

District Mining Engineer and Inspector of Mines, North Western Division—G. H. Hutchinson.

Officer in Charge, Drilling Branch and Mechanical Inspector of Mines—L. J. Burger.

Inspectors of Mines—
R. S. Prout, Dr. P. Golledge, Brisbane;
C. J. Maynard, V. Sandercock, Mount Isa;
W. P. Brunton, Cairns;
G. R. Morris, Rockhampton.

Electrical Inspectors of Mines—
G. H. Kidd, Cairns;
B. E. James, Brisbane.

Ecologist—Mr. P. Sattler; On secondment from Department of Co-ordinator General since March, 1974.

Mining Engineers—C. J. Gray, G. J. O'Regan.
Mr. O'Regan was appointed to the position in February, 1974.

Inspectors' Assistants—R. J. Conder, Mount Isa; P. G. O'Sullivan, Rockhampton.

Mr. O'Sullivan joined the Department of Mines in September, 1974.

Owing to illness of the State Mining Engineer, Mr. Stapleton attended the annual Conference of Chief Inspectors of Mines at Canberra during October.

HEALTH

There were two cases of lead poisoning reported as having occurred at Mount Isa Mines lead smelter during the year. Both were men who had been exposed for periods of up to 47 weeks and were transferred to other employment.

Within the limits of the available staff, surveys and investigations into dust, ventilation and noise in mines and quarries were continued. Conditions generally have been found to be satisfactory.

MINES REGULATION ACT

Compliance with the Act and Regulations thereunder generally were satisfactory. Some breaches of the Regulations were reported and investigated. There were no prosecutions under the Act during the year.

Orders in Council

By an Order in Council dated 10th January, 1974, the *Mines Regulation Act* 1964–1968 except Part X of the Regulations made under the above Act, applied to the following quarries:—Thiess Bros. Quarry, Bulimba; Leischke & Co. Quarry, State Forest Reserve 281; Mount Marrou Quarry, Nr. Marburg; North Coast Quarry, Nr. Dayboro; Vale Construction Quarry, Nr. Dayboro; Browns Quarry, Gilston; Harlaxton Quarry, Toowoomba.

By an Order in Council dated 28th March, 1974, it was proclaimed that from 1st June, 1974 "*The Mines Regulation Acts, 1910 to 1958*," ceased to apply to sewer construction and repair work. On and from 1st June, 1974, all main sewers and reticulation sewers whilst under construction and all excavations over 7 feet in depth made for the purpose of repairing sewers, are subject to the provisions of the *Mines Regulation Act* 1964–1968 except Part X of the Regulations made under the above Act.

WINDING ROPES

All rope testing by the Mines Department from Metalliferous Mines in Queensland was done at the Workshops of the Drilling Branch at Redbank.

The ropes tested were from the mines shown below:—

Mine	No. of Ropes Tested
Mount Isa	63
Hilton	17
Mount Morgan	4
Golden Plateau	2
Brisbane City Council (Sewer repair work)	3
Mount Arthur Molybdenum N/L Cairns	1
Neardie	2
Total	92

All friction winder ropes in use at Isa Mine were checked by non destructive testing with the Isa Mines Bochum Type SP 3 unit.

MINE MANAGER, MINE SURVEYOR, MINE ELECTRICIAN, OPEN-CUT EXAMINER AND DEPUTY CERTIFICATES AND WINDING LICENSES

During the year the Board of Examiners granted four First Class Metalliferous Mine Manager's Certificates, one Second Class Metalliferous Mine Manager's Certificate, one First Class Coal Mine Manager's Certificate, six Second Class Coal Mine Manager's Certificates, three Limited Mine Manager's Certificates, ten Mine Surveyor's Certificates, six Mine Electrician Certificates, 20 Deputy Certificates, 31 Open-cut Examiner's Certificates and four Winding Licenses.

In addition the Board granted 24 approval certificates in respect of foreign or Inter-State certificates.

Examinations were held in March, June, September and December and a total of 108 candidates sat for these examinations.

The following table shows the number of certificates and licenses issued by the Board of Examiners during the year as well as the total number issued since the introduction of new legislation and re-organisation of the Board of Examiners into two committees in June, 1964. One committee administers the issue of all certificates of competency under the Coal Mining Act and the Mines Regulation Act and the other the issue of Winding Licenses under these Acts.

TABLE 1

—	Mine Manager Certificates					Mine Surveyor Certificates	Mine Electrician Certificates	Deputy Certificates	Open Cut Examiner Certificates	Winding Licenses	Approval Certificates
	Metalliferous		Coal								
	First Class	Second Class	First Class	Second Class	Limited						
Issued 1st June, 1964, to 31st December, 1973 ..	70	..	12	22	16	49	39	69	98	94	87
Issued during year ended 31st December, 1974 ..	4	1	1	6	3	10	6	20	31	4	24
Total	74	1	13	28	19	59	45	89	129	98	111

STATE DRILLING OPERATIONS

Programme

A similar drilling programme to that carried out during 1973 was maintained during 1974 by officers of the Drilling Branch in conjunction with officers of the Geological Survey of Queensland.

Drilling Operation

Eighteen (18) drills operated over a wide area of the State. The total length drilled was 36 953·50 m compared with 40 910·04 m during 1973. The major cause of the decrease in operations was due to extremes of wet weather during the early part of the year. The length drilled on coal, stratigraphic and auger programme slightly decreased compared with that of 1973, while the length drilled on engineering and metalliferous programmes increased slightly. Table 2, following, shows the comparison of the overall performance on different types of drilling during 1973 and 1974.

TABLE 2

—	Coal	Stratigraphic	Metalliferous	Engineering	Auger	Total
Length Drilled 1973..	21 937·42	6 745·91	3 198·15	1 096·63	7 931·93	40 910·04
Length Drilled 1974..	18 722·95	4 627·57	5 421·46	1 650·51	6 531·01	36 953·50
Shifts 1973	3 836	1 628	600·25	215	314	6 593·25
Shifts 1974	2 940	1 245	740·50	256·25	249	5 430·75
Metres/shift—1973 ..	5·71	4·14	5·32	5·10	25·26	6·20
Metres/shift—1974 ..	6·37	3·72	7·32	6·44	26·23	6·80

Bore holes completed for the year were as follows:—

Type of Drilling	1974	1973
Coal	96	100
Stratigraphic (including regional mapping)	7	15
Metalliferous	393	181
Engineering and Groundwater	54	58
Auger (comprising some engineering, groundwater and industrial minerals)	1 054	1 196
Total	1 604	1 550

Coal drilling programmes were carried out at South Central Bowen Basin, North Central Bowen Basin, Emerald, Galilee Basin, North Bowen Basin and Blackwater.

Drilling was carried out under the stratigraphic heading at Springsure–Hughenden, Jericho and Warrinilla.

Metalliferous deposits were drilled at Gympie (limestone and gold), Murgon (limestone), Gingoongan (limestone), Kilkivan (copper), Monto (copper and molybdenum), Beaudesert (industrial sands and clays), Redland Bay (shale), Moreton Shire (extractive materials) and Pine Rivers (extractive materials).

Underground water or engineering investigations were carried out at Gordonvale, Gold Coast, Mulgrave River, Logan–Currumbin area and Maryborough.

Auger holes were drilled at Nerang, Caboolture, Beaudesert for industrial sands and clay, at Stradbroke Island for water supply and Redland Bay for industrial minerals.

General

A summary of the drilling carried out by the Drilling Branch during 1974 is shown in Table 3.

TABLE 3

Summary of Drilling carried out by the Department of Mines in 1974.

Locality	Completed Bores	Length Drilled	Shifts Worked	Length per Shift	Total Cost	Cost per Shift	Cost per Metre
		Metres		Metres	$	$	$
South Central Bowen Basin	40	8 745·18	1 300·00	6·73	326 076.30	250.83	37.29
Blackwater	5	1 068·65	171·00	6·25	44 545.64	260.50	41.68
Emerald	2	238·49	41·00	5·82	14 616.69	356.51	61.29
North Bowen Basin	24	2 562·39	161·00	15·92	43 444.43	269.84	16.95
Galilee	7	1 631·21	438·00	3·72	120 452.25	275.01	73.84
North Central Bowen Basin	18	4 477·03	829·00	5·40	165 453.34	199.58	36.96
COAL DRILLING	96	18 722·95	2 940·00	6·37	714,588.65	243.06	38.17
Warrinilla	1	1 516·48	437·00	3·47	140 400.49	321.28	92.58
Jericho	1	1 030·16	243·00	4·24	66 632.30	274.21	64.68
Springsure–Hughenden	5	2 080·93	565·00	3·68	165 025.62	292.08	79.30
STRATIGRAPHIC DRILLING	7	4 627·57	1 245·00	3·72	372 058.41	298.84	80.40
Advancetown	8	72·44	33·00	2·20	5 944.45	180.13	82.06
Mulgrave River	2	34·50	16·50	2·09	7 399.19	448.44	214.47
Logan–Currumbin	4	121·70	37·00	3·29	12 942.33	349.79	106.35
Maryborough	9	239·80	61·25	3·92	17 386·97	283.87	72.51
Gordonvale	27	1 148·27	101·50	11·31	29 502.64	290.67	25.69
Gold Coast	4	33·80	7·00	4·83	1 037.61	148.23	30.70
ENGINEERING DRILLING	54	1 650·51	256·25	6·44	74 213.19	289.61	44.96
Gympie	92	677·98	79·00	8·58	12 963.63	164.10	19.12
Murgon	126	1 253·18	102·00	12·29	20 227.35	198.31	16.14
Gingoongan	7	621·86	85·75	7·25	18 080.25	210.85	29.07
Kilkivan	7	1 220·45	250·25	4·88	55 217.99	220.65	45.24
Monto	3	310·79	90·00	3·45	17 107.44	190.08	55.05
Beaudesert	117	717·55	42·00	17·08	8 396.52	199.92	11.70
Redland Bay Shire	30	545·74	66·00	8·27	15 633.94	236.88	28.65
Moreton Shire	2	7·00	2·50	2·80	1 110.23	444.09	158.60
Pine Rivers	9	66·91	23·00	2·91	5 435.71	236.34	81.24
METALLIFEROUS DRILLING	393	5 421·46	740·50	7·32	154 173.06	208.20	28.44
Nerang	104	431·85	18·00	23·99	2 408.25	133.79	5.58
Caboolture	715	4 197·09	158·00	26·56	25 388.74	160.69	6.05
Stradbroke Island	15	702·70	10·00	70·27	2 499.76	249.98	3.56
Beaudesert	42	256·64	23·00	11·16	4 000.31	173.93	15.59
Redland Bay Shire	178	942·73	40·00	23·57	7 531.94	188.30	7.99
AUGER DRILLING	1 054	6 531·01	249·00	26·23	41 829.00	167.99	6.41
TOTAL DRILLING	1 604	36 953·50	5 430·75	6·80	1 356 862.31	249.85	36.72

STATE TREATMENT WORKS IRVINEBANK

Working on one and two shifts through to the middle of May and then on three shifts until closing time in December, the following ore was treated:—

Period	Ore	Concentrates
	Tonnes	Tonnes
January–June	2 014·4 232	24·682
July–December	4 896·9 168	59·380

Though heavy rains during the first four months of the year slowed down delivery of ore, there was enough on hand to commence crushing in February. With the easing of the rain, deliveries picked up and remained steady throughout the year, helped by a substantial rise in the price of tin and the availability of the flotation cells for treatment of mineralised concentrates. The cells were in constant use, with two thirds of the crushings for the year being floated.

Departmental Hire Plants most in use throughout the year were Compressor Plants, Quick Winches and Pumping Plants with Air Hoists not so much required.

Considering the constant drawing of water from the Ibis Dam for both ore treatment and domestic purposes, the level remained reasonably high though the water was badly discoloured at times and very difficult to settle.

GOVERNMENT ASSAY OFFICE CLONCURRY

The volume of work, dealt with at the Government Assay Office at Cloncurry, as compared with the previous year, was as follows:—

	1974	1973
Samples	1 737	2 046
Assays	2 903	3 139

SECTION VI—PETROLEUM EXPLORATION AND PRODUCTION

1. EXPLORATION

1–1 General

There has been little change in the low level of activity in petroleum exploration which has been the situation in Queensland over the past four years. However, there was some increase in seismic activity in 1974. The reserves of the Moonie Oil Field, and the Roma Gas Fields which supply gas to Brisbane, continue to be depleted.

Exploration costs have been severely affected by the current inflationary economic situation. The rewards from petroleum exploration in Queensland have not been high over the years, and it appears that what money is available is being directed into what are considered to be more profitable areas. Figures 1–1 and 1–2 indicate the trend of exploration activity under various headings.

The Royal Commissioners inquiring into the probable effects of drilling on the Great Barrier Reef presented their report towards the end of the year and an Interdepartmental Committee has been appointed to study the report and make recommendations to the Queensland Government.

1–2 Drilling

During the year eight exploration wells and four appraisal wells were drilled by five operators (twelve exploration wells by six operators in 1973). Hartogen Exploration drilled four successful appraisal wells in the Kincora field south of Roma, and two exploration wells which were unsuccessful. Bridge Oil drilled a successful exploration well south of Roma which produced gas. Unsuccessful wells were drilled by Associated Australian Resources (2), Hematite Petroleum (1), and the Queensland Department of Mines (2). Tables 1–1 to 1–5 and figure 1–5 indicate details of drilling activity.

1–3 Geophysical Surveys

One magnetic survey and 13 seismic surveys were carried out during the year. Figure 1–3 indicates the activity levels and details are indicated in Tables 1–6 and 1–7.

1–4 Concessions

Figure 1–4A indicates the areas covered by onshore petroleum concessions as at 31st December, 1974. The locations of the Moonie and Alton Oil Fields and the Roma Gas Fields, to which the Moonie–Brisbane Oil Pipeline and the Roma–Brisbane Gas Pipeline are connected are indicated. Figure 1–4B indicates the areas covered by offshore concessions.

Figure 1-1

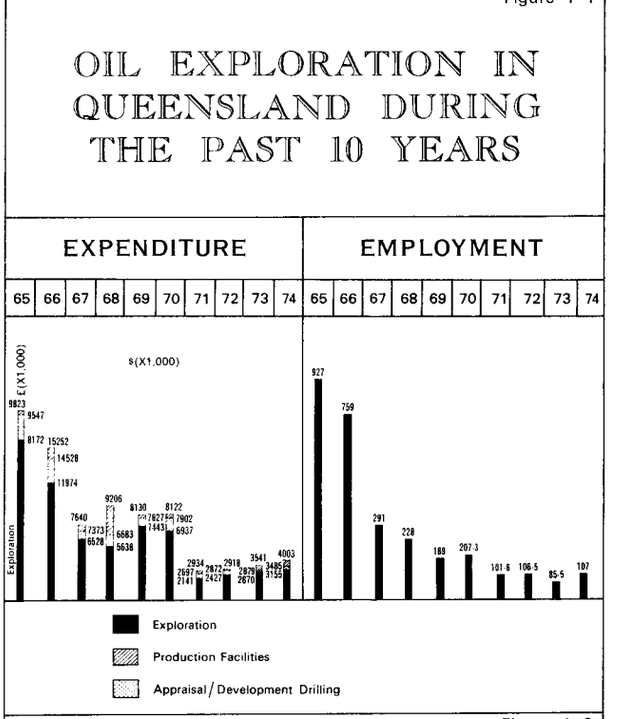


Figure 1-2

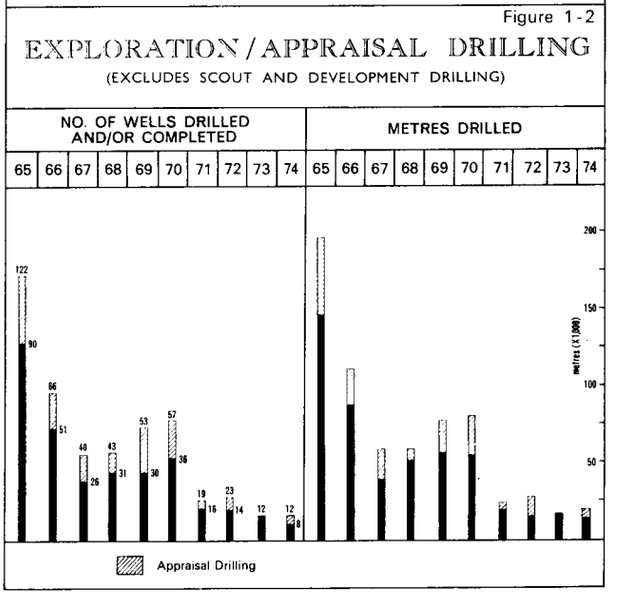


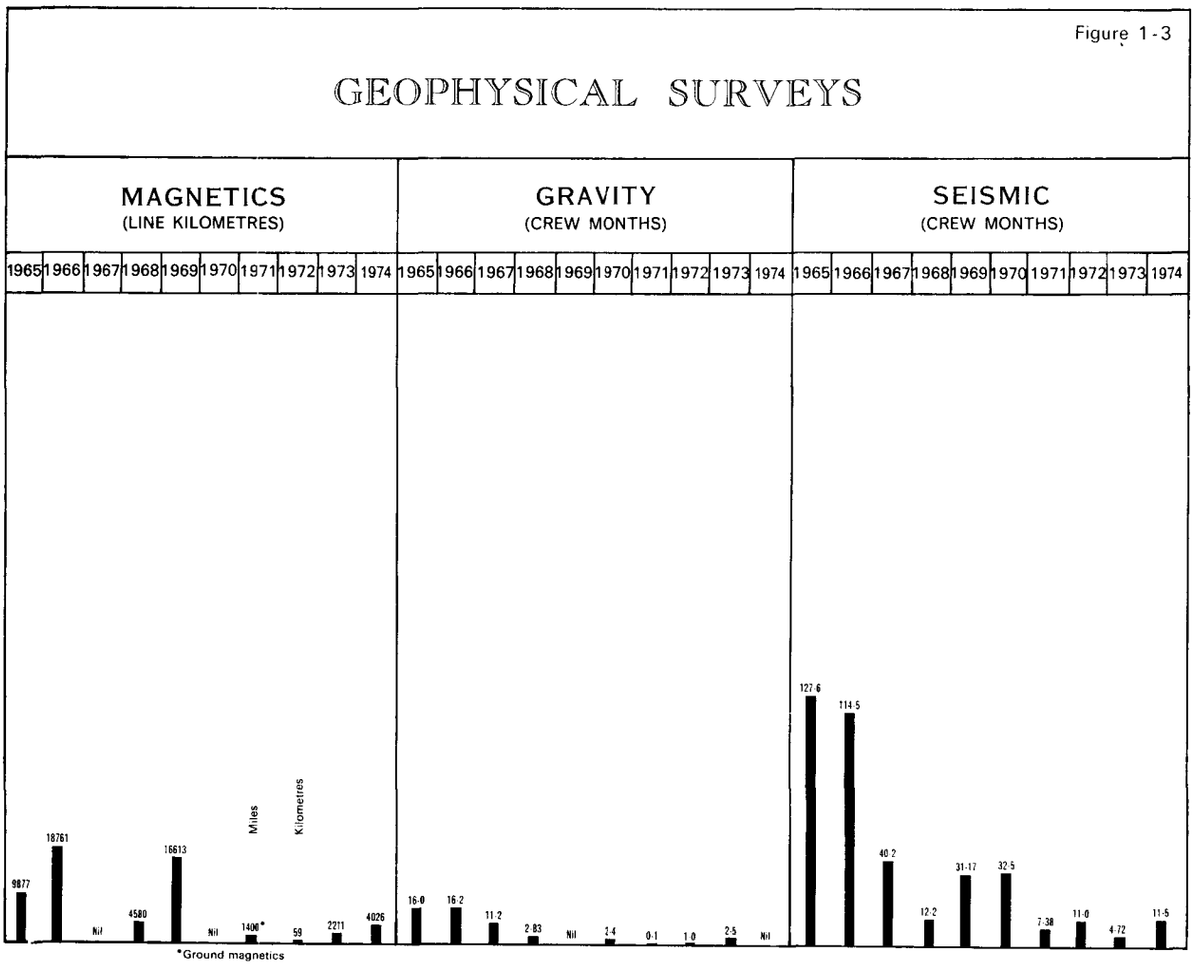
Table 1–2 lists the names of concession holders and operators at the end of the year together with a summary of work carried out in each concession. It will be noted that the areas of Authorities to Prospect are being converted to a system of identification by blocks. The Table indicates that approximately 618 600 square kilometres were held under 45 Authorities to Prospect onshore (692 500 and 51 in 1973). This is approximately 9 517 blocks in the new system, which comprise the land between two meridians of longitude five minutes apart and two parallels of latitude five minutes apart. Ten permits covering 2 221 blocks each also of about 65 square kilometres, were held offshore (16 and 2 918 in 1973).

2. DEVELOPMENT AND PRODUCTION

2–1 Oil

Tables 2–1 and 2–3 show reserves and production of liquid petroleum. Production during the year consisted mainly of the crude oil produced from Moonie, Alton, and Bennett oil fields, and also the condensate that was separated from the natural gas produced from Roma Area gas fields. Total production during the year (80 904 cubic metres) was about 26 per cent. less than that of the previous year (108 797 cubic metres).

Figure 1-3



A study of Moonie field production behaviour for the year confirms the previously detected active water drive mechanism and that oil production is still declining hyperbolically. Under the present assumed Economic Limit of production of about 110 cubic metres per day the ultimate recovery from the field is expected to be equal to 2 957 thousand cubic metres. However, if it becomes financially feasible to produce the field at a daily rate of about 50 cubic metres, then the life of the field may be extended by about five (5) years, and more important, an additional 160 thousand cubic metres of oil approximately may be recovered. No gas or water was injected in the 56–4 or 58–0 reservoirs during the year.

As indicated in last year's Annual Report oil production from Alton Field appears to be coming from an upper quasi continuous sand, subjected to a partial water drive mechanism, and a lower isolated sand with apparently a low primary recovery factor. It appears that during the year the lower sand has ceased producing completely, thus resulting in a sudden sharp drop in daily production and a corresponding decrease in recoverable reserves for this field.

Recoverable reserves of condensate for the Boxleigh field have been reduced appreciably following a detailed analysis of data obtained from a limit test conducted in the well Boxleigh No. 1, which indicates that the gas/water contact for the reservoir is very close to this well.

The initial recoverable reserves of condensate which will be separated from the produced natural gas are based on the actual condensate production as at 31st December, 1974, and then on a ratio of about 11·35 cubic metres per million cubic metres of gas (2 Barrels per MMcf) for the remaining recoverable gas reserves which are presently connected to Roma–Brisbane pipeline.

2–2 Gas

Table 2–2 shows Queensland's natural gas reserves at the end of the year. The remaining recoverable reserves for Snake Creek and Hope Creek fields have been downgraded to possible reserves awaiting investigations and thus omitted from the abovementioned table.

A detailed study of Richmond field has indicated that the initial recoverable reserves for the field are 309 million cubic metres, i.e. 76 million cubic metres less than last year's estimates. This study also showed that the ultimate recovery from this field appears to be rate sensitive. Consequently, it has been recommended that production for certain wells be reduced in an effort to improve the sweep, and thus recovery efficiency.

The initial recoverable gas reserves of fields connected to Roma–Brisbane pipeline at 31st December, 1974, were 3 607 million cubic metres, i.e. 163 million cubic metres less than last year's corresponding figure. There have been discussions during the year regarding the connection of further gas fields situated in the Surat–Bowen basins to the pipeline.

Table 2–4 shows that 289 million cubic metres of gas were produced during the year from 14 fields compared to 276 million cubic metres during the previous year. The average daily rate of production was about 792 thousand cubic metres per day which is about 36 thousand cubic metres per day larger than last year's figure.

The average ratios of condensate and water in this year's gas production are about 12 and 4 cubic metres per million cubic feet of gas respectively compared to 10 and 3 cubic metres per million cubic metres in the previous year.

3. EMPLOYMENT AND ACCIDENTS

As at 31st December, 1974, staff in the Petroleum Section of the State Mining Engineer's Division consisted of—

(1) Senior Petroleum Engineer—Henry W. J. Stewart.

(2) Petroleum Engineer (Reservoir)—J. O. Alemian.

(3) Assistant Petroleum Engineer—K. L. Crowe.

Employment in the industry in man years was 107 (85 in 1973). Details of employment are given in Table 3–1. Sixteen accidents were reported during the year, causing 227 days of lost time. Accidents are analysed in Tables 3–2 and 3–3. The Personnel Accident Frequency, which is the number of disabling injuries per one million man hours, was 120, and the Severity Rate, which is the number of days lost due to disability suffered related to man hours exposure and expressed per million man hours, was 1 700 (150 and 3 372 in 1973). However, the figures are not particularly meaningful when activity is so low.

Figure 1-4A

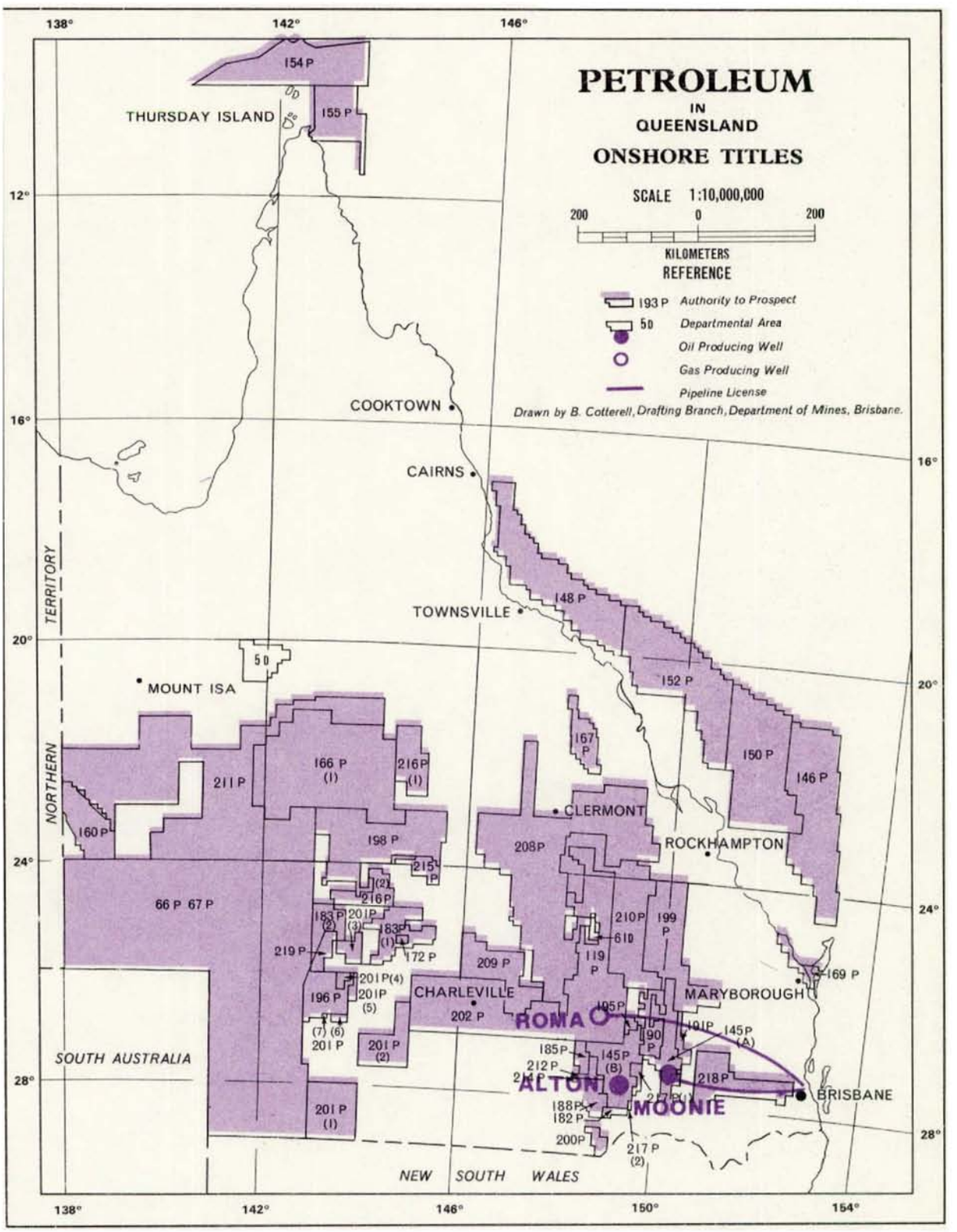
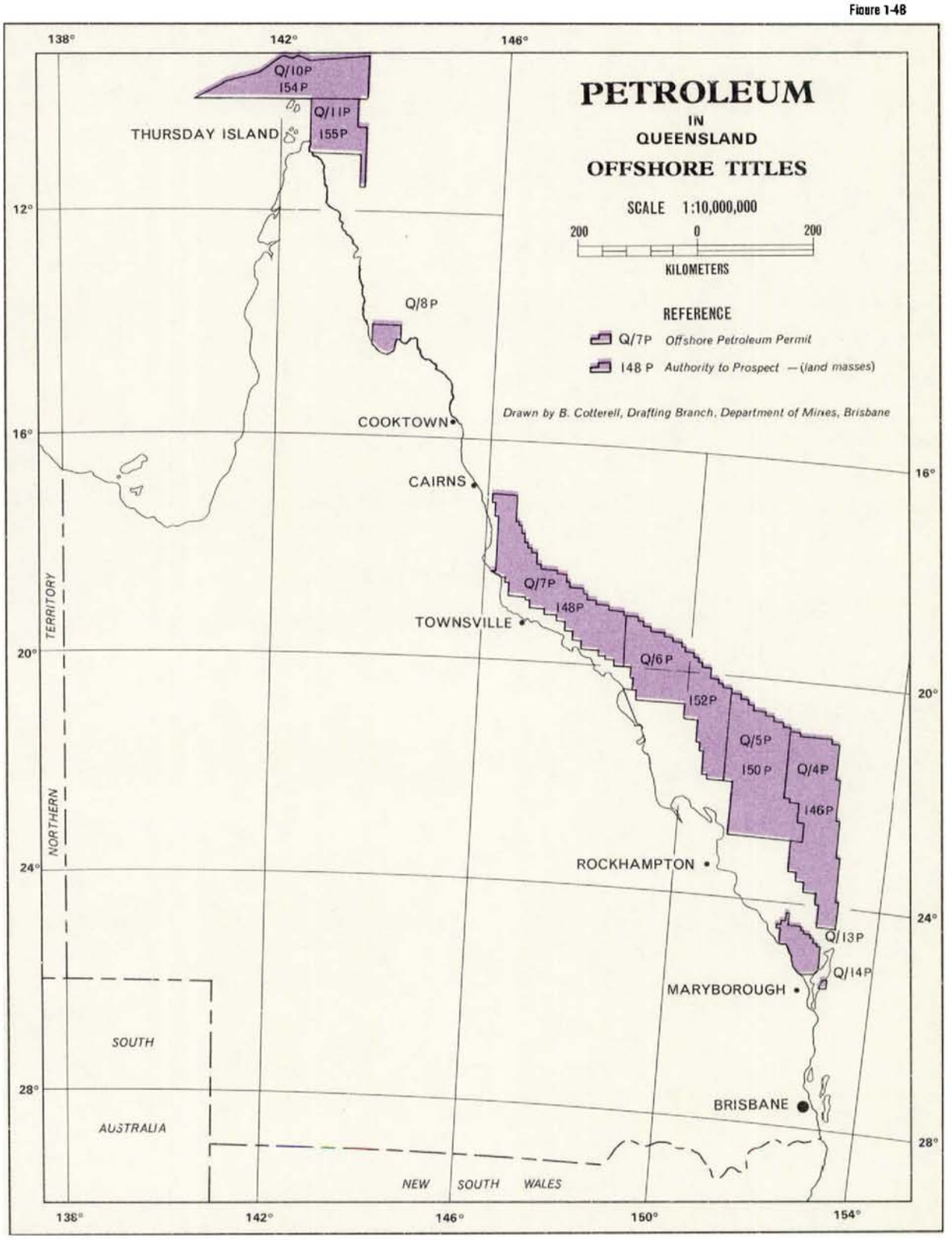

PETROLEUM
IN
QUEENSLAND
ONSHORE TITLES
SCALE 1:10,000,000
200 0 200
KILOMETERS
REFERENCE
193 P Authority to Prospect
50 Departmental Area
Oil Producing Well
Gas Producing Well
Pipeline License
Drawn by B. Cotterell, Drafting Branch, Department of Mines, Brisbane.
138°
142°
146°
150°
154°
12°
16°
20°
24°
28°
THURSDAY ISLAND
COOKTOWN
CAIRNS
TOWNSVILLE
MOUNT ISA
CLERMONT
ROCKHAMPTON
CHARLEVILLE
MARYBOROUGH
ROMA
ALTON
MOONIE
BRISBANE
NORTHERN TERRITORY
SOUTH AUSTRALIA
NEW SOUTH WALES
154 P
155 P
148 P
152 P
150 P
146 P
167 P
166 P (1)
216 P (1)
211 P
160 P
198 P
208 P
215 P
216 P
66 P 67 P
219 P
172 P
209 P
210 P
199 P
610
119 P
169 P
196 P
202 P
195 P
191 P
145 P (A)
190 P
185 P
145 P (B)
212 P
218 P
188 P
182 P
200 P
217 P (2)
201 P (1)
201 P (2)
201 P (3)
201 P (4)
201 P (5)
183 P (1)
183 P (2)
50

Figure 1-48


PETROLEUM
IN
QUEENSLAND
OFFSHORE TITLES
SCALE 1:10,000,000
200 0 200
KILOMETERS
REFERENCE
Q/7P Offshore Petroleum Permit
148 P Authority to Prospect — (land masses)
Drawn by B. Cotterell, Drafting Branch, Department of Mines, Brisbane
Q/10P
154 P
Q/11P
155P
THURSDAY ISLAND
Q/8P
COOKTOWN
CAIRNS
Q/7P
148P
TOWNSVILLE
Q/6P
152P
Q/5P
150 P
Q/4P
146P
ROCKHAMPTON
Q/13P
Q/14P
MARYBOROUGH
BRISBANE
NORTHERN TERRITORY
SOUTH AUSTRALIA
NEW SOUTH WALES
138°
142°
146°
150°
154°
12°
16°
20°
24°
28°

4. LEGISLATION

No significant changes were made to legislation during the year but preparations were made in line with the planned metrication of the Petroleum Acts and Regulations in the future.

5. PIPELINES

5–1 Moonie Oil Pipeline

80 198 cubic metres of oil from the Moonie, Alton and Bennett fields, an average of 220 cubic metres per day, was moved by the Pipeline to Lytton Terminal (108 797 and 298 in 1973). These figures include 3 470 cubic metres of condensate from the Roma area (2 691 in 1973). All oil was delivered to local refineries.

No leaks were reported during the year. Action was taken to improve cathodic protection levels along the line, and regular maintenance inspections were carried out.

5–2 Roma Gas Pipeline

277 813 thousand cubic metres of gas, an average of approximately 761 thousand cubic metres per day, were transmitted to Brisbane and intermediate markets from the Roma area (269 119 and 737 in 1973).

No leaks occurred, cathodic protection levels were maintained, and maintenance inspections and preventive maintenance were carried out during the year.

TABLE 1–1

SUMMARY OF DRILLING ACTIVITIES, 1974

Class of Well	Completed					Uncompleted at 31st December, 1974			Total All Wells	Metres Drilled
	Oil Producers	Gas Producers	Water Wells	Abandoned	Total	Awaiting Completion of Drilling	Testing	Suspended		
Exploration ..	..	1	5	2	8	..	..	..	8	17 457
Appraisal ..	..	4	..	..	4	..	..	..	4	6 094
Development ..	..	..	..	..	..	..	..	..	..	..
Totals ..	..	5	5	2	12	..	..	..	12	23 551

TABLE 1-2

SUMMARY OF OIL SEARCH OPERATIONS IN QUEENSLAND, YEAR 1974

Concessionholders and Names and Addresses of Principal Officers	Operating Company (Drilling Contractor where Applicable)	Authority to Prospect	*Area in Blocks	Locality	Surveys		Drilling Operations			General Remarks
					Type	Duration (Party Months)	Exploration	Appraisal	Development	
Alliance Oil Development Australia N.L., 100 Collins Street, Melbourne, 3000; E. H. C. Garland, General Manager	Concessionholder	160P	2 985 sub-blocks †	West of Boulia	Nil	..	Ethabuka 1 ..	Nil	Nil	
American Australian Energy Ltd., 301 S. Harwood Street, Dallas, Texas, 75201, U.S.A.; R. G. Fowler, Vice President	Concessionholder	207P	410	Hughenden ..	Seismic ..	0·5	Nil	Nil	Nil	
An-Car Australian Oil Co., 1 Boston Place, Boston, Massachusetts, C2108, U.S.A.	Concessionholder	182P	490 sq. mls. ‡	South-East of St. George	Nil	..	Nil	Nil	Nil	
		201P	(1) 3 600 sub-blocks (2) 2 880 sub-blocks (3) 730 sub-blocks (4) 250 sub-blocks (5) 220 sub-blocks (6) 200 sub-blocks (7) 15 sub-blocks †	South of Thargomindah South of Quilpie North-West of Quilpie North-West of Quilpie North-West of Quilpie South-West of Quilpie South-West of Quilpie	Nil	..	Nil	Nil	Nil	
Associated Australian Resources N.L. (85%), I.O.L. Petroleum Ltd. (15%) Associated—E. N. Avery, Chairman and Managing Director, 411 Collins Street, Melbourne, Victoria; D. M. Traves, Executive Director, 31 Charlotte Street, Brisbane I.O.L.—R. T. Madigan, Chairman; J. Collier, Director, 95 Collins Street, Melbourne, Victoria	Mines Administration Pty. Limited	119P	9 968 sq. mls. ‡	Roma–Emerald	Nil	..	Appletree No. 1 Silver Valley No. 1	Nil	Nil	
Australian Gulf Oil Company, P.O. Box 641, Singapore; W. J. Conroy, Manager of Agreements and Contracts and/or J. A. Parker, Manager, Financial Administration	Concessionholder	Q/4P Q/5P Q/6P Q/7P 146P 148P 150P 152P	397 400 397 356	Great Barrier Reef—Offshore Included land masses	Nil	..	Nil	Nil	Nil	Obligation suspended pending completion of Great Barrier Reef Enquiry
Black Giant Oil Co., 1304 Avenue, L, Cisco, Texas, 76437, U.S.A.; Robert B. Kamon, President	Concessionholder	211P	1 111	Boulia ..	Nil	..	Nil	Nil	Nil	
California Asiatic Oil Company (50%) and Texaco Overseas Petroleum Company (50%); G. F. Bryant, Manager, P.O. Box 162, North Brisbane, 4000	Texaco Overseas Petroleum Company	Q/10P 154P	278	Torres Strait .. Included land masses	Nil	..	Nil	Nil	Nil	Obligation suspended pending completion of Great Barrier Reef Enquiry

SUMMARY OF OIL SEARCH OPERATIONS IN QUEENSLAND, YEAR 1974—continued

Concessionholders and Names and Addresses of Principal Officers	Operating Company (Drilling Contractor where Applicable)	Authority to Prospect	*Area in Blocks	Locality	Surveys		Drilling Operations			General Remarks
					Type	Duration (Party Months)	Exploration	Appraisal	Development	
Consolidated Fuels Inc., 529 Fort Worth National Bank Building, Fort Worth, Texas, 76102, U.S.A.	Concessionholder	190P	1 271 sub-blocks †	North-East of Surat	Nil	..	Nil	Nil	Nil	
Consumers Oil Pty. Ltd., Elveden House, 1670, 717–7th Avenue, S.W. Calgary, Alberta, T2POZ3; John B. Maughan, President	Concessionholder	215P	33	North of Blackall	Nil	..	Nil	Nil	Nil	
Cooper Basin Oil Co., 403 Main Building, 1212 Main Street, Houston, Texas, 77002, U.S.A.	Concessionholder	198P	8 405 sub-blocks †	East of Windorah	Nil	..	Nil	Nil	Nil	
Coral Petroleum Ltd., 216, 816 7th Avenue, S.W. Calgary, Alberta, T2P1A1; Gordon A. Raymond, Treasurer	Concessionholder	199P	5 800 sub-blocks †	Theodore ..	Nil	..	Nil	Nil	Nil	
Dartmouth Dome Oil Inc., 915 Citizens Bank Building, Houston, Texas, 77002, U.S.A.	Concessionholder	202P	3 711 sub-blocks †	Charleville ..	Nil	..	Nil	Nil	Nil	
Delhi International Oil Corporation (50%) Santos Limited (50%) .. .. Delhi—Norman C. Miller, President, 2900 Fidelity Union Tower, Dallas 1, Texas, 75201, U.S.A. Robert R. Blair, Vice President and General Manager, Australia, Box 2364, G.P.O., Adelaide, South Australia, 5001 Santos—J. O. Zehnder, Managing Director and David Partington, Secretary, 183 Melbourne Street, North Adelaide, South Australia, 5006	Delhi International Oil Corporation	66P and 67P	67 600 sq. mls. ‡	South-Western Queensland	Seismic ..	6	Nil	Nil	Nil	Australian Aquitaine Petroleum Pty. Ltd. operated a seismic program in portions of ATP 66P and 67P under the terms of various farmout agreements
Gulf Interstate Overseas Ltd., 1702 Niels Esperson Building, Houston, Texas, 77002, U.S.A.	Concessionholder	Q/11P 155P	126	Torres Strait .. Included land masses	Nil	..	Nil	Nil	Nil	Obligation suspended pending completion of Great Barrier Reef Enquiry
Houston Oil and Minerals of Australia Ltd. Inc., 242 The Main Building, 1212 Main, Houston, Texas, 77002, U.S.A.	Concessionholder	210P	311	Springsure ..	Nil	..	Nil	Nil	Nil	
International Oil Ltd. with reserved interests to Australian Oil and Gas Corporation; W. T. Wells, Jnr., Managing Director, 505 St. Kilda Road, Melbourne, Victoria; L. W. Diamond, Resident Manager, P.O. Box 77, Toowoomba, Queensland, 4350	Concessionholder	145P	(A) 2 137 sub-blocks (B) 3 162 sub-blocks †	Moonie .. Surat	Seismic ..	0·6	Hartogen Monclova No. 1 Bridge Silver Springs No. 1	Hartogen Kincora No. 7 Hartogen Kincora No. 8 Hartogen Kincora No. 9 Hartogen Kincora No. 10	Nil	
L. H. Smart Oil Exploration Co. Ltd., G.P.O. Box 2670, Sydney, 2001; L. H. Smart, Chairman	Concessionholder	196P	2 320 sub-blocks †	Eromanga ..	Nil	..	Nil	Nil	Nil	
L.S.G. Australia Inc., 301 S. Harwood Street, Dallas, Texas, 75116, U.S.A.; J. L. Hainer, Exploration Manager	Concessionholder	191P	338 sub-blocks †	West of Chinchilla	Nil	..	Nil	Nil	Nil	

SUMMARY OF OIL SEARCH OPERATIONS IN QUEENSLAND, YEAR 1974—continued

Concessionholders and Names and Addresses of Principal Officers	Operating Company (Drilling Contractor where Applicable)	Authority to Prospect	*Area in Blocks	Locality	Surveys		Drilling Operations			General Remarks
					Type	Duration (Party Months)	Exploration	Appraisal	Development	
Major Crude Oil Inc., 915 Houston Citizens Bank Building, Houston, Texas, 77002, U.S.A.	Concessionholder	214P	18	South of Roma	Nil	..	Nil	Nil	Nil	
Minex Inc., 7 No. Lafayette Street, P.O. Box 185, Shelby, North Carolina, 28150, U.S.A.; Charles C. Heath, President; English Jackson, Vice President; Ray W. Lutz, Vice President; L. Paul Eeds, Secretary/Treasurer	Concessionholder	208P	881	North of Mitchell	Nil	..	Nil	Nil	Nil	
Mount Mejack Minerals Pty. Ltd., 6th Floor, Lewis House, 159 Kent Street, Sydney, 2000; E. St. John, Managing Director; G. Winslow, Director	Tricentrol Australia Ltd. ..	195P	172 sub-blocks †	East of Roma ..	Nil	..	Nil	Nil	Nil	
Oilmin N.L. (46½%); Transoil N.L. (19½%), 27 Turbot Street, P.O. Box 232, Brisbane, North Quay, 4000; C. W. Siller, Chairman Flinders Petroleum N.L. (34%), 5 Gresham Street, Sydney, 2000; T. A. Miller, Manager	Oilmin N.L.	Q/8P	35	Princess Charlotte Bay	Nil	..	Nil	Nil	Nil	Obligation suspended pending completion of Great Barrier Reef Enquiry
Pacific American Oil Company ..	Seneca Oil Co., 3013 N.W. 59th Street, Oklahoma City, Oklahoma, 73112, U.S.A.; Edward D. Hudgins, Director	Q/13P Q/14P	79 3	East of Bundaberg East of Maryborough	Nil	..	Nil	Nil	Nil	Expired 31st December, 1974
Pecos–Western Australian Inc., 11246/50., Post Oak Road, Houston, Texas, 77035, U.S.A.; Albert O. Tucker, Vice President, Field Operations	Concessionholder	185P	483 sub-blocks †	St. George ..	Seismic ..	0·3	Nil	Nil	Nil	
Petrominerals Corporation, Century 21 Centre, Suite 819, 1830 Century Park, East Century City, Los Angeles, California, 90067, U.S.A.	Concessionholder	188P	621 sq. mls. ‡	St. George ..	Nil	..	Nil	Nil	Nil	
Phillips Australian Oil Company, G.P.O. Box 73, Brisbane, 4001; W. O. Stubbs, Acting Manager Sunray Australian Oil Company Inc., Suite 505, Cathay Building, Mount Sophia, Singapore; T. Adams, Vice President	Phillips Australian Oil Company	172P	192 sq. mls. ‡	Gilmore ..	Nil	..	Nil	Nil	Nil	
Phillips Australian Oil Company G.P.O. Box 73, Brisbane, 4001; W. O. Stubbs, Acting Manager Sunray Australian Oil Company Inc., Suite 505, Cathay Building, Mount Sophia, Singapore; T. Adams, Vice President Associated Australian Resources, N.L., 31 Charlotte Street, Brisbane, 4000; D. M. Traves, Executive Director I.O.L. Petroleum Ltd., 95 Collins Street, Melbourne, 3000; R. B. Leslie, Exploration Manager	Associated Australian Resources, N.L.	183P	(1) 2 690 sub-blocks (2) 1 481 sub-blocks †	North of Adavale Windorah	Nil	..	Hartogen Grey Range No. 1	Nil	Nil	

SUMMARY OF OIL SEARCH OPERATIONS IN QUEENSLAND, YEAR 1974—continued

Concessionholders and Names and Addresses of Principal Officers	Operating Company (Drilling Contractor where Applicable)	Authority to Prospect	*Area in Blocks	Locality	Surveys		Drilling Operations			General Remarks
					Type	Duration (Party Months)	Exploration	Appraisal	Development	
Queensland Energy Corporation, 403 Main Building, 1212 Main Street, Houston, Texas, 77002, U.S.A.	*Concessionholder*	209P	156	Augathella	Nil	..	Nil	Nil	Nil	
Target Exploration Pty. Ltd., 91 Clarence Street, G.P.O. Box 4318, Sydney, New South Wales, 2001; F. Fitzpatrick, Executive Director	Concessionholder	167P	1 860 sub-blocks †	West of Mackay	Nil	..	Nil	Nil	Nil	
		212P	16	South of Roma	Nil	..	Nil	Nil	Nil	
Target Exploration Pty. Ltd., Endeavour Oil Co., N.L. Hartogen Exploration Pty. Ltd., Tricentrol Australia Ltd.	Target Exploration Pty. Ltd. ..	213P	218	Adavale	Nil	..	Nil	Nil	Nil	Relinquished, September, 1974
Thor International Energy Corporation, 4350, E. Camelback Road, Suite 204B, Phoenix, Arizona, 85018, U.S.A.	Concessionholder	216P	(1) 99	South-East of Hughenden	Nil	..	Nil	Nil	Nil	
			(2) 63	West of Blackall						
		217P	(1) 14	South-East of Surat	Nil	..	Nil	Nil	Nil	
			(2) 2	North of Talwood						
Tricentrol Australia Ltd., 31st Level, Australia Square, Sydney, 2000; P. N. Jamieson, General Manager; A. D. Meiyer, Petroleum Exploration Manager	Concessionholder	200P	539 sub-blocks †	Mungindi ..	Seismic ..	0·8	Nil	Nil	Nil	
U.S. Natural Resources Aust. Ltd., 300 Sand Hill Road, Menlo Park, California, 94025, U.S.A.; J. P. Del Favero, President	Hematite Petroleum Pty. Ltd., B.H.P. House, 140 William Street, Melbourne, 3000; R. P. Harrison, Manager Operations	166P	633	Boulia to Winton	Seismic ..	1·0	Hematite Weston No. 1	Nil	Nil	
W. G. Stuart, P.O. Box 173, Toowong, Queensland, 4066	Concessionholder	218P	156	Toowoomba ..	Nil	..	Nil	Nil	Nil	
X.L.X. N.L., 514 Chapel Street, South Yarra, Victoria, 3141; I. G. Sykes, Chairman and Managing Geologist	Concessionholder	219P	778 sub-blocks †	East of Windorah	Aeromagnetic Gravity	1·0	Nil	Nil	Nil	

NOTES.—*Areas are being converted to a block system—blocks are bounded by five minutes of longitude and five minutes of latitude (about 25 square miles).
† Sub-blocks are bounded by one minute of longitude and one minute of latitude.
‡ A square mile approximately equals one twenty-fifth of a block.

TABLE 1-3

EXPLORATION DRILLING

Well	Title A. to P.	Latitude S. Longitude E.	Elevation	Spudded T.D. Reached Rig Released	Total Depth	Formation Tops	Tests (Misruns not shown) (Gas flow in thousands of cubic metres per day)	Status 31–12–74; Remarks
			m	dd–mm–yy	m	m K.B.		
A.A.R. Silver Valley No. 1 ..	119P	26° 43′ 36″ 149° 15′ 51″	KB 333·8 GL 329·2	24–2–74 20–3–74 24–3–74	2 340	5 Roma 174 Blythesdale 650 Injune Creek 1 137 Hutton 1 373 Evergreen 1 514 Precipice 1 517 Moolayember 1 724 Showgrounds 1 728 Rewan 1 989 Bandanna 2 081 Black Alley 2 117 Tinowon 2 214 Muggleton 2 253 Lorelle 2 325 Combarngo	DST 4 2 252–2 339 m. Recovered mud 6 m	Converted to water well
A.A.R. Appletree No. 1	119P	26° 54′ 17″ 149° 16′ 03″	KB 282·0 GL 277·4	17–1–74 13–2–74 17–2–74	2 344	5 Roma 267 Blythesdale 821 Injune Creek 1 270 Hutton 1 507 Evergreen 1 608 Precipice 1 623 Moolayember 1 874 Showgrounds 1 883 Rewan 2 082 Bandanna 2 167 Black Alley 2 192 Tinowon 2 275 Muggleton 2 292 Lorelle 2 327 Granite	DST 1 2 301–2 315 m. Recovered mud 53 m. Recovered water 142 m	Converted to water well
Hartogen Grey Range No. 1 ..	183P	25° 06′ 33″ 144° 37′ 22″	KB 352·3 GL 348·3	19–4–74 19–5–74 25–5–74	3 491	4 Winton 711 Mackunda 770 Allaru 991 Toolebuc 998 Wallumbilla 1 279 Hooray 1 501 Westbourne 1 564 Adori 1 615 Birkhead 1 718 Hutton 1 943 Permian 2 233 Buckabie 3 159 Etonvale D1 3 247 Etonvale D2 3 315 Early Devonian? 3 360 Basement	DST 1 3 243–3 313 m. Recovered water 3 243 m	Converted to water well
Mines Department Aramac No. 1	60D	22° 56′ 56″ 145° 17′ 03″	KB 224·6 GL 220·3	19–3–74 18–4–74 20–4–74	1 825	4 Wallumbilla 165 Ronlow 357 Moolayember 551 Clematis 645 Rewan 835 Bandanna 914 Colinlea 1 018 Aramac 1 106 Jochmus 1 572 Jericho	DST 1 1 713–1 823 m. Recovered water 1 713 m	Converted to water well
Mines Department Hexham No. 1	60D	22° 48′ 22″ 145° 57′ 08″	KB 370·4 GL 366·1	11–7–74 4–8–74 6–8–74	1 830	4 Moolayember 216 Clematis 309 Rewan 614 Bandanna 714 Colinlea 793 Jochmus 1 322 Jericho	Nil	Converted to water well

TABLE 1-3—continued:

EXPLORATION DRILLING—continued

Well	Title A. to P.	Latitude S. Longitude E.	Elevation	Spudded T.D. Reached Rig Released	Total Depth	Formation Tops	Tests (Misruns not shown) (Gas flow in thousands of cubic metres per day)	Status 31-12-74; Remarks
			m	dd-mm-yy	m	m K.B.		
Hartogen Monclova No. 1 ..	145P	27° 00′ 35″ 148° 57′ 12″	KB 281·3 GL 277·6	26-5-74 9-6-74 12-6-74	1 745	4 Wallumbilla 336 Bungil 458 Mooga 594 Orallo 770 Gubberamunda 868 Springbok 1 025 Birkhead 1 241 Hutton 1 436 Evergreen 1 579 Moolayember 1 662 Blackwater 1 732 Basement	DST 1 1 489–1 553 m DST 2 1 672–1 655 m. Recovered water 1 655 m DST 3 1 681–1 673 m DST 4 1 745–1 695 m	Converted to water well
Hematite Weston No. 1	166P	22° 02′ 20″ 142° 36′ 39″	KB 211·2 GL 207·0	5-6-74 22-6-74 23-6-74	1 982	5 Winton 514 Allaru 747 Toolebuc 776 Wallumbilla 972 Hooray 1 135 Birkhead 1 166 Hutton 1 248 Triassic 1 441 Permian 1 964 Basement	Nil	Abandoned
Bridge Silver Springs No. 1 ..	145P	27° 36′ 00″ 149° 06′ 12″	KB 264·9 GL 260·9	6-6-74 29-6-74 30-6-74	1 900	615 Blythesdale 1 347 Walloon 1 550 Hutton 1 678 Evergreen 1 760 Wandoan 1 871 Showgrounds 1 882 Kianga 1 888 Timbury Hills	DST 1 1 899–1 866 m. Recovered gas 241 TCmpD	Completed as gas well

TABLE 1–4

DRILLING STATISTICS

Operator	Maximum Number of Rigs Operating in Year	Exploration					Appraisal/Development					Total	
		Rig Months Drilling in Year	Metres Drilled in Year	Number of Wells Spudded in Year	Average Metres Drilled		Rig Months Drilling in Year	Metres Drilled in Year	Number of Wells Spudded in Year	Average Metres Drilled		Metres Drilled in Year	Wells Spudded in Year
					Per Rig Month	Per Completed Well				Per Rig Month	Per Completed Well		
Alliance Oil Development N.L.	1	1·5	..	..	..	..	..	..	..	..	..	..	..
Associated Australian Resources N.L.	1	2·2	4 684	2	2 129	2 342	..	..	..	..	..	4 684	2
Bridge Oil N.L.	1	1	1 900	1	1 900	1 900	..	..	..	..	..	1 900	1
Hartogen Exploration Pty. Ltd.	2	1·75	5 236	2	2 992	2 618	1·5	6 094	4	4 064	1 524	11 330	6
Hematite Petroleum Pty. Ltd.	1	0·6	1 982	1	3 305	1 982	..	..	..	..	..	1 982	1
Queensland Department of Mines	1	2·0	3 655	2	1 827	1 827	..	..	..	..	..	3 655	2
	..	9·05	17 457	8	1 929	2 182	1·5	6 094	4	4 064	1 524	23 551	12

TABLE 1–5
DEVELOPMENT AND APPRAISAL WELLS

Well	Title A. to P.	Latitude S. Longitude E.	Elevation	Spudded T.D. Reached Rig Released	Total Depth	Tests (Misruns not shown) (Gas flow in thousands of cubic metres per day)	Status 31–12–74; Remarks
			m	dd–mm–yy	m		
Hartogen Kincora No. 7	145P	27° 03′ 53″ 148° 49′ 04″	KB 323·2 GL 319·4	9–3–74 21–3–74 23–3–74	1 545	DST 1 1 423–1 433 m. Recovered gas 106 TCmpD Recovered mud 21 m	Completed as gas well
						DST 2 1 463–1 472 m. Recovered gas 1425 TCmpD	
						DST 3 1 474–1 487 m. Recovered gas 29 TCmpD Recovered mud 3 m	
						DST 4 1 503–1 545 m. Recovered mud 9 m	
Hartogen Kincora No. 8	145P	27° 01′ 48″ 148° 48′ 52″	KB 301·7 GL 297·9	25–3–74 5–4–74 7–4–74	1 515	DST 1 1 396–1 435 m. Recovered gas 288 TCmpD. Recovered oil 1 423 CmpD. Recovered mud 426 m	Completed as gas well
						DST 2 1 437–1 452 m. Recovered gas 1 423 TCmpD. Recovered mud 38 m	
						DST 3 1 455–1 515 m. Recovered mud 12 m	
Hartogen Kincora No. 9	145P	27° 04′ 21″ 148° 50′ 22″	KB 284·7 GL 280·9	10–4–74 20–4–74 22–4–74	1 518	DST 1 1 401–1 429 m. Recovered water 429 m	Completed as gas well
						DST 2 1 446–1 464 m. Recovered gas 192 TCmpD	
						DST 4 1 487–1 518 m. Recovered water 518 m	
Hartogen Kincora No. 10	145P	27° 02′ 47″ 148° 49′ 33″	KB 298·5 GL 294·7	6–5–74 18–5–74 20–5–74	1 516	DST 1 1 353–1 371 m. Recovered water 820 m	Completed as gas well
						DST 2 1 404–1 420 m. Recovered gas 192 TCmpD	
						DST 3 1 444–1 460 m. Recovered gas 24 TCmpD	
						DST 4 1 475–1 516 m. Recovered mud 107 m	

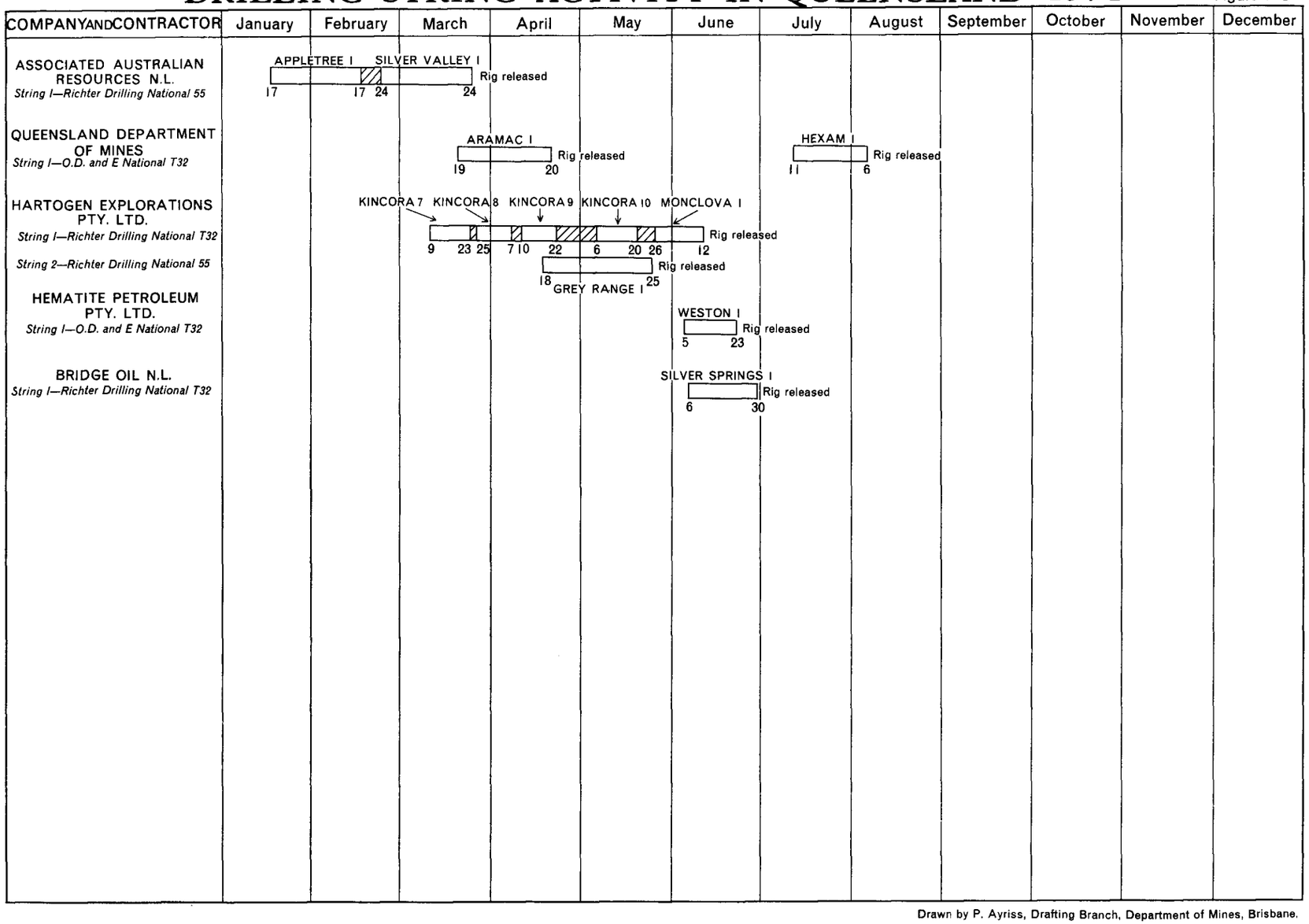
TABLE 1–6

MAGNETIC SURVEYS

Title	Operator	Contractor	Locality	Area Covered	Line km
219 P	XLX, N.L.	Austral Exploration ..	East Windorah	Aerial traverse	4 026

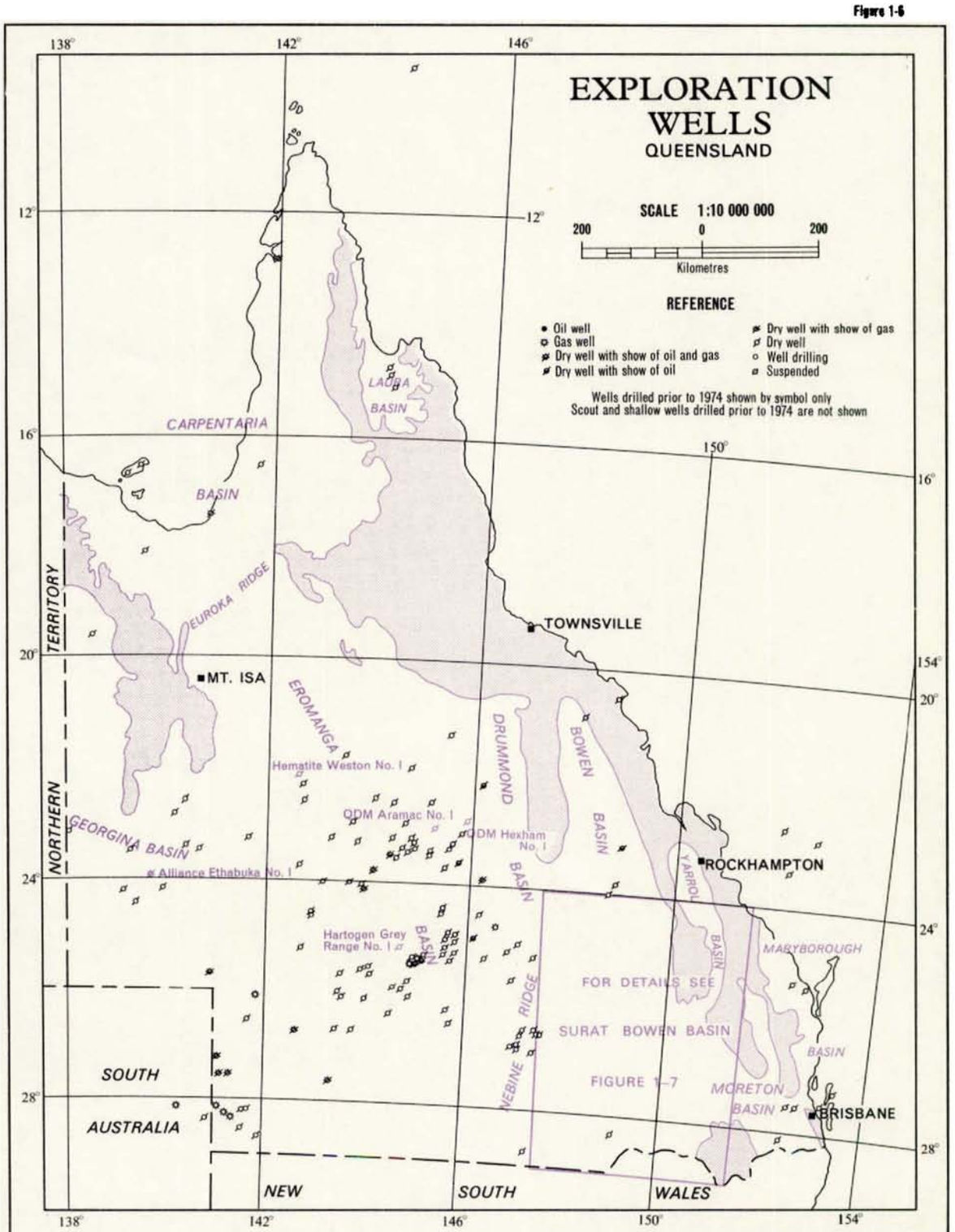
DRILLING STRING ACTIVITY IN QUEENSLAND 1974

Figure 1–5



Drawn by P. Ayriss, Drafting Branch, Department of Mines, Brisbane.

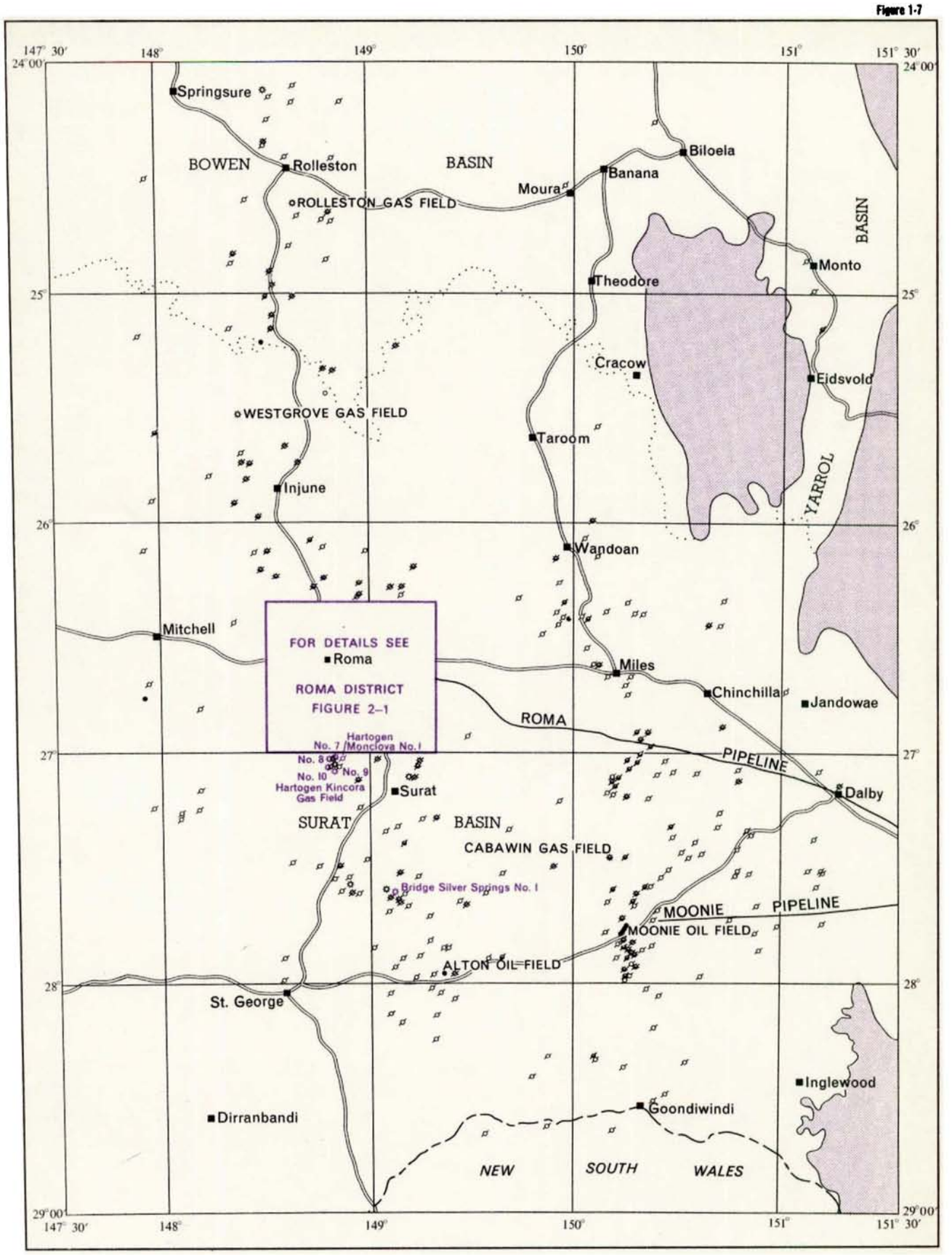
Figure 1-6



Drawn by Drafting Branch, Department of Mines, Brisbane

EXPLORATION WELLS
SURAT BOWEN BASIN

Figure 1-7



SCALE 1:2 500 000

50 0 50 100

Kilometres

REFERENCE

- Oil well
- Gas well
- Dry well with show of oil and gas
- Dry well with show of oil
- Dry well with show of gas
- Dry well

Wells drilled prior to 1974 shown by symbol only

Drawn by P. Ayriss, Drafting Branch, Department of Mines, Brisbane

TABLE 1–7

SEISMIC SURVEYS

Title	Operator	Contractor	Locality	Crew Months	Type and Method of Survey	Length of Sub-surface Section	Number of Shot Points	Number of Holes Drilled	Total Metres Drilled	Explo-sives Used	Detona-tors Used
						km				kg	
66/67P	Australian Aquitaine Petroleum Pty. Ltd.	Petty-Ray	Windula	1·5	Reflection using weight drop	161	1 194 profiles	..	..	..	..
		Petty-Ray	Baryulah	3	Reflection using weight drop	422	4 320 profiles	..	..	..	..
		Geophysical Exploration Services	Karmona	1	Reflection using dynamite	191	653	1 072	18 794	8 772	1 578
		Geophysical Exploration Services	Coonaberry ..	0·5	Reflection using dynamite	105	357	378	10 248	11 155	760
207P	American Australian Energy Ltd. ..	Austral United Geophysical ..	Albro	0·5	Reflection	35	262	272	6 218	4 712	340
145P	Bridge Oil, N.L.	G.E.S. Pty. Ltd.	Wunger	1·0	Reflection	124	623	3 138	14 347	7 020	3 099
166P	Hematite Petroleum Pty. Ltd.	G.E.S. Pty. Ltd.	Winton	1·0	Reflection digital	243	1 034	1 026	34 423	952	1 074
145P	International Oil Ltd.	G.E.S. Pty. Ltd.	Leichhardt	0·2	Reflection	5	33	36	1 539	385	35
			Telgazli Creek ..	0·4	Reflection	56	278	280	9 432	2 925	295
			Waggamba	0·2	Reflection	18	89	98	4 346	1 033	100
185P	Pecos-Western Australian Inc. ..	Austral United Geophysical Pty. Ltd.	Gowrie	0·3	Reflection	16	76	77	..	861	..
Scientific Investiga-tion out-side per-mit areas	Shell Development (Australia) Pty. Ltd.	Geophysical Service International	Coral Sea (M.V. Eugene McDermott II)	1·1	Reflection (Pneumatic acoustic energy source)	7 482	58 342	..	..	..	..
200P	Tricentral Australia Ltd.	G.E.S. Pty. Ltd.	Niminbah	0·8	Reflection	124	456	2 288	10 583	5 643	2 287

2. DEVELOPMENT AND PRODUCTION

TABLE 2-1
SUMMARY OF PROVED LIQUID PETROLEUM RESERVES* AS AT 31st DECEMBER, 1974

Company	Field	Reservoir	Stock Tank Oil in 1 000's of Cubic Metres						
			Initial Recoverable Reserve as at 31-12-73	Change during 1974			Initial Recoverable Reserve as at 31-12-74	Cumulative Production to 31-12-74	Remaining Recoverable Reserve
				Revisions	Extensions	New Discoveries			
Amalgamated Petroleum, A.A.R. and I.O.L. Petroleum Ltd.	Trinidad	Precipice ..	17	..	..	..	17	2	15
A.A.R. and I.O.L. Petroleum Ltd.	Richmond	Precipice ..	14	..	..	..	14	2	12
	†Other Fields ..		43	‡	..	..	43	§2	41
	Roma Area ..		..	..	..	..	..	..	..
	Condensate from Roma Area Fields		..	37	..	..	37	18	19
International Oil Ltd. and Others	Alton	Evergreen ..	305	−35	..	..	270	265	5
	Moonie	Precipice ..	2 957	..	..	..	2 957	2 817	140
	Bennett	Precipice ..	105	..	..	..	105	14	91
	‖Boxleigh	Showgrounds ..	52	−48	..	..	4	..	4
	‖Silver Springs ..	Showgrounds ..	..	52	..	..	52	..	52
	‖Kincora	Evergreen ..	..	9	..	..	9	..	9
	‖Cabawin	Bandanna ..	115	..	..	..	115	..	115
TOTAL ..	..	..	3 608	15	..	..	3 623	3 120	503

* Liquid Petroleum means oil and condensate.

† Includes Anabranch (I.R. 11—C.P. v.s.), Maffra (I.R. 18—C.P. v.s.), Pringle Downs (I.R. 5—C.P. 0), Duarran (I.R. 10—C.P. 2) in 1 000's of cubic metres. I.R. = Initial Recoverable reserves. C.P. = Cumulative Production. v.s. = very small.

‡ Because of its minor reserves Sunnybank field which was included with other fields Roma Area in last year's report is omitted from the above table.

§ No production during the year. A slight increase in this year's cumulative production is caused by rounding up.

‖ Condensate.

TABLE 2-2
SUMMARY OF PROVED GAS RESERVES AS AT 31st DECEMBER, 1974

Company	Field	Reservoir*	Gas in Millions of Cubic Metres†						
			Initial Recoverable Reserve as at 31-12-73	Change during 1974			Initial Recoverable Reserve as at 31-12-74	Cumulative Production to 31-12-74	Remaining Recoverable Reserve
				Revisions	Extensions	New Discoveries			
I. FIELDS CONNECTED TO ROMA–BRISBANE PIPELINE (SURAT–BOWEN BASINS)									
Amalgamated Petroleum and Associated Group	Snake Creek ..	†Showgrounds	57	−20	..	..	37	37	0
	Tarrawonga ..	Precipice ..	138	..	..	..	138	100	38
	Bony Creek ..	Precipice ..	799	..	..	..	799	325	474
Associated Group	Pickanjinnie	Precipice ..	155	..	..	..	155	91	64
		Showgrounds ..	182	..	..	..	182	112	70
	Pine Ridge ..	Evergreen ..	181	..	..	..	181	52	129
	Raslie	Precipice ..	84	..	..	..	84	36	48
	Pleasant Hills	Evergreen Precipice Showgrounds	940	..	..	..	940	213	727
	Grafton Range ..	Evergreen ..	354	..	..	..	354	93	261
	Richmond ..	Precipice ..	385	−76	..	..	309	208	101
	Wallumbilla South	Tinowon ..	110	..	..	..	110	52	58
	Pringle Downs ..	Timbury Hills ..	17	..	..	..	17	4	13
	Duarran	Precipice ..	24	..	..	..	24	12	12
	Hope Creek ..	Precipice ..	67	−67	..	..	v.s.	v.s.	0
	Yanalah	Precipice ..	169	..	..	..	169	13	156
	Timbury Hills ..	Precipice ..	105	..	..	..	105	39	66
	Hospital Hill ..	Precipice ..	3	..	..	..	3	1	2
		SUB-TOTAL ..	3 770	−163	..	..	3 607	1 388	2 219

TABLE 2-2

SUMMARY OF PROVED GAS RESERVES AS AT 31st DECEMBER, 1974—*continued*

Company	Field	Reservoir*	Gas in Millions of Cubic Metres†						
			Initial Recoverable Reserve as at 31-12-73	Change during 1974			Initial Recoverable Reserve as at 31-12-74	Cumulative Production to 31-12-74	Remaining Recoverable Reserve
				Revisions	Extensions	New Discoveries			
II. FIELDS NOT CONNECTED TO PIPELINE (SURAT–BOWEN BASINS)									
Associated Group	Pine Ridge ..	Moolayember ..	47	..	..	..	47	..	47
	Pleasant Hills ..	Weald	14	..	..	..	..	..	14
	‡Mooga	Evergreen ..	147	..	..	..	147	..	147
	‡Euthulla ..	Precipice ..	156	..	..	..	156	..	156
	‡Westlands ..	Evergreen ..	27	..	..	..	27	..	27
	‡Beaufort ..	Precipice ..	116	..	..	..	116	1	115
	Blyth Creek ..	Precipice ..	52	..	..	..	52	..	52
	Lamen	Precipice ..	44	..	..	..	44	..	44
	Oberina	Precipice ..	54	..	..	..	54	1	53
	Lyndon Caves ..	Precipice ..	55	..	..	..	55	..	55
	Maffra	Precipice ..	79	..	..	..	79	..	79
	Back Creek ..	Showgrounds ..	11	..	..	..	11	1	10
	Rolleston Area ..		1 007	..	..	..	1 007	5	1 002
		SUB-TOTAL ..	1 809	..	..	..	1 809	8	1 801
International Oil Ltd.	Major	Granite Wash ..	89	..	..	..	89	..	89
	Boxleigh	Showgrounds ..	150	—139	..	..	11	..	11
	Silver Springs ..	Showgrounds ..	..	150	..	..	150	..	150
	Noorindoo ..	Tinowon ..	111	—108	..	..	3	..	3
	Kincora	Evergreen ..	532	88	..	..	620	..	620
	Cabawin	Bandanna ..	145	..	..	..	145	..	145
		SUB-TOTAL ..	1 027	—9	..	..	1 018	..	1 018
III. FIELDS NOT CONNECTED TO PIPELINE (ADAVALE BASIN)									
Phillips and Others	Gilmore	SUB-TOTAL ..	588	..	..	..	588	§10	578
IV. FIELDS NOT CONNECTED TO PIPELINE (COOPER BASIN)									
Delhi/Santos and others	Roseneath ..	Permian ..	170	..	..	..	170	..	170
	Epsilon	Permian ..	453	..	..	..	453	..	453
	Wolgolla	§Permian ..	170	..	..	..	170	..	170
	Durham Downs ..	§Permian ..	170	..	..	..	170	..	170
		SUB-TOTAL ..	963	..	..	..	963	..	963
		TOTAL FOR QUEENSLAND	‖8 157	—172	..	..	7 985	1 406	6 579

* Reservoir has been rezoned.
† The remaining reserves have been downgraded to possible reserves awaiting further investigation.
‡ Cumulative production adjusted.
§ Volumetric estimates.
‖ A small difference in comparison to last year's annual report is caused by rounding the results obtained by soft metricating the imperial units, etc.

TABLE 2–3

ANNUAL OIL PRODUCTION—YEAR 1974

Company	Field	Reservoir	Total Production for Year			Cumulative Production To End of Year			Status of Field Wells at End of Year												
										Number of Producing Wells Closed in							Other Wells				
			Oil Cubic Metres	Water Cubic Metres	Gas Thousand Cubic Metres	Oil Cubic Metres	Water Cubic Metres	Gas Thousand Cubic Metres	Number of Wells on Production	Available	High BS & W	High G.O.R.	Not Connected	Awaiting Investigation	Awaiting Workover	B.H.P.	Observation	Injection	Suspended	Abandoned	Total
Associated Australian Resources, N.L. and I.O.L. Petroleum Ltd.	Anabranch ..	Boxvale ..	..	..	..	1 371	50	58	Nil	1	..	..	..	..	..	..	..	..	1	2
	Duarran ..	Precipice ..	..	..	..	2 060	1 926	90	Nil	1	..	..	..	..	..	..	..	..	4	5
	Maffra ..	Precipice ..	..	..	..	49	8	34	Nil	..	..	..	..	1	..	..	..	..	4	6
	Pringle Downs	Timbury Hills	..	..	..	100	..	23	Nil	..	..	..	1	..	..	..	..	..	..	1
	Richmond ..	Precipice ..	..	..	..	2 098	170	1 771	Nil	1	..	..	..	..	..	..	..	..	4	5
	Sunnybank ..	Rewan ..	..	..	..	11	..	4	Nil	..	..	..	..	1	..	..	..	..	4	5
Joint Venture—Amalgamated Petroleum-A.A.R., I.O.L. Petroleum	Trinidad ..	Precipice ..	..	..	..	2 050	78	159	Nil	..	..	..	..	2	..	..	..	..	7	9
† See Table 2-4 ..	..	..	3 470	..	..	17 550	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sub-Total ..	..	..	3 470	..	..	25 289	2 232	2 139	Nil	3	..	..	1	4	..	..	..	..	1	24	33
International Oil Ltd.	Alton ..	Evergreen ..	6 563	1 832	416	265 426	19 537	22 428	4	..	..	..	..	..	2	..	..	..	2	..	8
	Bennett ..	Precipice ..	465	..	..	13 861	..	..	1	..	..	..	..	..	..	..	..	..	..	1	2
	Moonie ..	56–4 Sand ..	363	19	21	65 062	50 903	6 291	1	2	..	..	..	..	..	..	..	1	1	1	6
		58–0 Sand ..	70 043	524 771	3 772	2 751 872	3 507 124	141 352	15	5	..	..	..	..	2	..	8	..	..	4	34
Sub-Total ..	..	..	77 434	526 672	4 209	3 096 221	3 577 564	170 071	21	7	..	..	..	..	4	..	8	1	3	6	50
Total ..	..	..	80 904	526 672	4 209	3 121 510	3 579 796	172 210	21	10	..	..	1	4	4	..	8	1	4	30	83

* Includes all liquid petroleum.
† Condensate produced from gas fields.

TABLE 2–4
ANNUAL GAS PRODUCTION—YEAR 1974

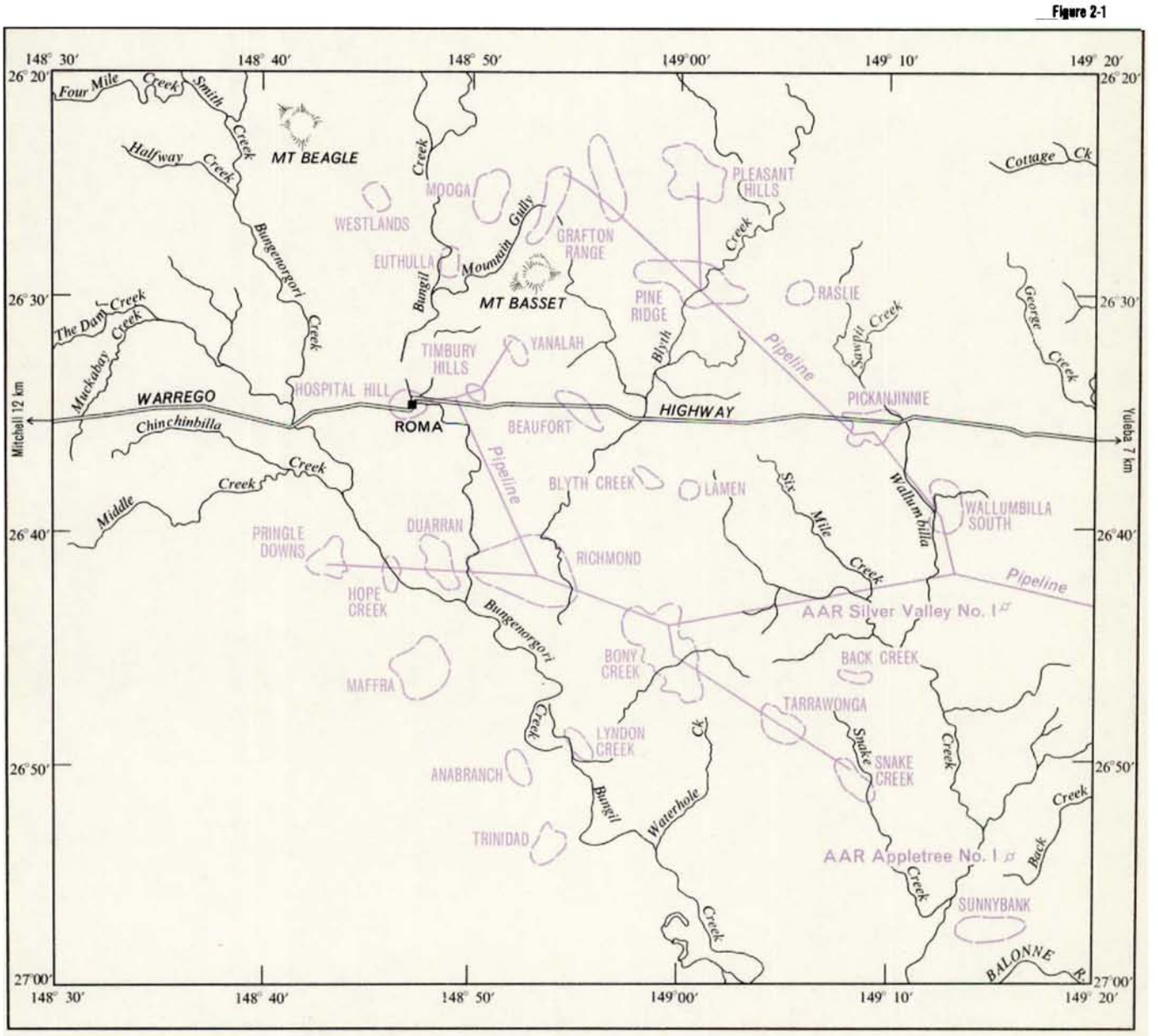
Company	Field	Reservoir	Total Production for Year			Cumulative Production to End of Year			Status of Field Wells at End of Year											
										Number of Producing Wells Closed in						Other Wells				
			Gas Thousand Cubic Metres	Condensate Cubic Metres	Water Cubic Metres	Gas Thousand Cubic Metres	Condensate Cubic Metres	Water Cubic Metres	Number of Wells on Production	Available	BS & W	Not Connected	Awaiting Investigation	Awaiting Workover	B.H.P.	Observation	Injection	Suspended	Abandoned	Total
	Roma Area																			
Associated Australian Resources N.L.	Beaufort ..	Precipice ..	..	..	..	498	..	..	..	..	..	1	..	..	..	..	..	2	1	4
	Blyth Creek ..	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5	7
	Bony Creek ..	Precipice ..	63 005	1 201·5	336·4	324 456	4 923·6	907·7	6	..	..	2	1	..	..	..	..	..	5	14
	Duarran ..	Precipice ..	1 264	12·3	2·1	11 528	162·2	23·7	1	..	..	..	..	..	..	..	..	..	..	1
	*Euthulla ..	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	4
	*Euthulla ..	Showgrounds ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	Dual
	†Grafton Range	Evergreen "D"	35 529	25·0	86·8	93 091	476·7	208·3	6	..	..	..	..	..	..	..	..	4	9	19
	†Grafton Range	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	Dual
	Hope Creek ..	Precipice ..	..	..	..	63	1·3	0·2	..	..	..	..	..	1	..	..	..	..	1	2
	Hospital Hill ..	Precipice ..	..	..	..	1 343	..	..	..	..	..	..	1	..	..	..	..	..	..	1
	Lamen ..	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
	Lynden Caves	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	2
	Mooga ..	Evergreen ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	4
	‡Pickanjinnie ..	Precipice ..	14 947	130·5	56·9	90 595	1 003·5	203·0	1	1	..	..	1	..	..	..	..	..	..	3
	‡Pickanjinnie ..	Showgrounds ..	12 205	95·6	103·2	112 063	1 203·1	316·1	2	1	..	..	..	..	..	..	..	..	4	7
	Pine Ridge ..	Moolayember ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Pine Ridge ..	Precipice ..	16 994	19·9	21·5	51 661	278·1	84·1	3	..	..	1	..	..	..	..	..	2	7	13
	§Pleasant Hills	Evergreen "D"	8 362	4·4	5·3	29 040	179·5	47·1	2	..	..	..	..	..	..	..	..	..	2	4
	§Pleasant Hills	Precipice ..	11 081	5·4	44·2	31 039	156·1	88·2	1	..	..	..	..	..	..	..	..	..	3	4
	Pleasant Hills ..	Showgrounds ..	40 089	17·0	125·5	152 307	1 119·6	359·2	3	..	..	2	..	..	..	..	..	2	4	11
	Pleasant Hills ..	Weald	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Pringle Downs	Timbury Hills	2 550	145·2	47·0	4 385	191·3	52·6	1	..	..	..	..	..	..	..	..	..	3	4
	Raslie	Precipice ..	8 949	12·3	26·4	35 608	285·9	80·1	1	..	..	..	..	..	..	..	..	..	4	5
	Richmond ..	Precipice ..	31 570	495·6	126·1	207 165	3 185·7	517·7	4	1	..	2	..	2	..	..	..	..	11	20
	‖Tarrawonga ..	Precipice ..	24 180	777·4	66·4	99 572	2 138·7	225·1	1	..	..	..	..	..	..	..	..	1	1	3
	¶Tarrawonga ..	Showgrounds ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	Dual
	Timbury Hills	Precipice ..	4 799	104·0	4·5	38 688	325·0	11·0	1	..	..	..	..	..	..	..	..	..	..	1
	Wallumbilla South	Tinowan ..	10 614	402·4	80·4	52 471	1 122·3	153·1	2	..	..	..	..	..	..	..	..	..	1	3
	Westlands ..	Evergreen ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	4
	Yanalah ..	Precipice ..	3 184	21·3	4·7	12 630	57·7	8·4	1	..	..	..	..	..	..	..	..	1	1	3
A.A.R./Amalgamated Petroleum N.L.	Back Creek ..	Showgrounds ..	..	..	..	501	0·3	..	..	..	..	1	..	..	..	..	..	1	3	5
	Snake Creek ..	Showgrounds ..	..	..	..	37 346	738·8	226·1	..	..	..	3	..	..	..	..	..	..	4	7
	Tarrawonga ..	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
I.P.S.	Tarrawonga ..	Precipice ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
		Sub-Total ..	289 322	3 469·8	1 137·4	1 386 850	17 549·6	3 511·7	36	3	..	12	3	3	..	..	..	28	79	164

TABLE 2–4—continued
ANNUAL GAS PRODUCTION—YEAR 1974—continued

Company	Field	Reservoir	Total Production for Year			Cumulative Production to End of Year			Status of Field Wells at End of Year											
										Number of Producing Wells Closed in						Other Wells				
			Gas Thousand Cubic Metres	Condensate Cubic Metres	Water Cubic Metres	Gas Thousand Cubic Metres	Condensate Cubic Metres	Water Cubic Metres	Number of Wells on Production	Available	BS & W	Not Connected	Awaiting Investigation	Awaiting Workover	B.H.P.	Observation	Injection	Suspended	Abandoned	Total
	Rolleston Area																			
Associated Australian Resources N.L.	Arcturus ..	Bandanna ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	4
	Glentulloch ..	Early Storms ..	..	..	..	627	..	266·1	..	..	..	..	..	..	..	..	..	1	2	3
	Rolleston ..	Early Storms ..	..	..	..	3 917	9·1	3·2	..	..	..	1	..	..	..	..	..	1	7	9
	Rolleston ..	Mantuan ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Westgrove ..	" Unit 6" ..	..	..	..	538	..	..	..	..	..	2	..	..	..	..	..	..	2	4
		SUB-TOTAL ..	..	..	..	5 082	9·1	229·3	..	..	..	3	..	..	..	..	..	5	13	21
Phillips Australian Oil Company	Gilmore ..	Devonian ..	..	..	..	10 364	..	..	..	..	..	3	..	..	..	..	..	..	2	5
		SUB-TOTAL ..	..	..	..	10 364	..	..	..	..	..	3	..	..	..	..	..	..	2	5
International Oil Ltd. and Others	Major	Granite Wash ..	..	..	..	*16*	3·5	..	..	..	..	..	..	..	..	..	..	..	2	2
	Boxleigh ..	Showgrounds ..	**	..	..	**	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Noorindoo ..	Tinowan ..	..	..	..	1 642	604·1	..	..	..	..	1	..	..	..	..	..	..	2	3
	Kincora ..	Evergreen ..	**	..	..	**	..	..	..	..	..	7	..	..	..	..	..	..	3	10
	Silver Springs ..	Showgrounds ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
		SUB-TOTAL ..	**	..	..	1 658	607·6	..	..	..	..	8	..	..	..	..	..	2	7	17
Total Exploration Pty. Ltd.	Roseneath ..	Permian ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
		SUB-TOTAL ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Delhi International Oil Corporation	Epsilon ..	Permian ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
	Durham Downs	Permian ..	**	..	..	**	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Walgolla ..	Permian ..	**	..	..	**	..	..	..	..	..	..	..	..	..	..	..	1	..	1
		SUB-TOTAL ..	**	..	..	**	..	..	..	..	..	..	..	..	..	..	..	4	..	4
		TOTAL ..	289 322	3 469·8	1 137·4	1 403 954	18 166·3	3 741·0	36	3	..	26	3	3	..	..	..	40	101	212

* Well No. 1 Dual Precipice and Showgrounds.
† Well No. 2 Dual Evergreen and Precipice—All other production classified " Evergreen."
‡ Well No. 6 Dual Precipice and Showgrounds.
§ Well No. 13 Dual Evergreen and Precipice.
‖ Amalgamated Petroleum minor share entitlement this production.
¶ Well No. 4 Dual Precipice and Showgrounds.
** Minor production during tests.

Figure 2-1



EXPLORATION WELLS

ROMA DISTRICT

SCALE 1:500 000

5 0 5

Kilometres

REFERENCE

Gasfield

Dry well

Wells drilled prior to 1974 are not shown

Drawn by P. Ayriss, Drafting Branch, Department of Mines, Brisbane

TABLE 2–5

ANNUAL OIL AND GAS UTILISATION STATEMENT 1974

	Moonie, Alton, Bennett				Roma Area Oil and Gas Fields			
	International Oil Ltd.				Associated Group			
	Oil		Gas		Oil		Gas	
	Cubic Metres	Percentage of Total	Million Cubic Metres	Percentage of Total	Cubic Metres	Percentage of Total	Million Cubic Metres	Percentage of Total
Total Annual Production	77 434	100·0	4·208	100·0	3 470	100·0	289·322	100·0
Field Utilisation—								
Primary Recovery	..	..	1·592	38	..	..	..	..
Secondary Recovery	..	..	..	..	..	..	..	..
Drilling/Production	..	..	..	..	..	..	..	..
Field as Fuel	..	..	..	..	..	..	..	..
Sub-Total—Field Utilisation ..	..	..	2·616	62	..	..	..	..
Operational Losses—								
Processing	642	v. small	..	..	..	..	2·540	0·9
Gathering								
Pipeline								
Sub-Total—Losses	642	v. small	..	..	..	..	2·540	0·9
Adjustments—								
Volume Flared/Vented in Field ..	..	..	..	..	..	..	2·022	0·7
Change in Stocks—								
Field	..	v. small	..	..	..	..	−1·072	0·3
Terminal	+64	v. small	..	..	..	..	..	..
Sub-Total—Adjustments	+64	v. small	..	..	..	..	0·950	0·3
Local Sales or Deliveries	..	..	..	..	..	..	8·019	2·8
Sub-Total—Local Sales	..	..	..	..	..	..	8·019	2·8
Pipeline Receipts	76 728	99·1	..	..	3 470	100·0	277·813	96·0
Pipeline Operations—								
Used as Fuel	..	..	..	..	..	..	2·460	0·9
Operational Losses	..	..	..	..	..	..	0·028	v. small
Change in Line Pack	−30	v. small	..	..	..	..	−2·799	−1·0
Sub-Total—Pipeline Operations ..	−30	v. small	..	..	..	..	−0·311	−0·1
Sales from Pipeline	76 758	99·1	..	..	3 470	100·0	278·124	96·1

Total Annual Production—Pipeline Receipts and Local Sales and Adjustments and Losses and Field Utilisation.
Pipeline Receipts—Sales from Pipeline and Pipeline Operations.

TABLE 3-1

EMPLOYMENT (MAN-YEARS)—PETROLEUM EXPLORATION AND DEVELOPMENT

Field													Office and Administration			Total
Geological and Geophysical				Exploration Drilling					Appraisal and Development Drilling				Operator's Employees			
Geologists and Geophysicists		Technicians and Helpers		Supervisors, Petroleum Engineers, Geologists, Toolpushers, and Drillers		Drilling Crews		Others	Supervisors, Petroleum Engineers, Geologists, Toolpushers, and Drillers		Drilling Crews		Others	Geologists and Geophysicists	Drilling	Administration and Clerical	
Employed by		Employed by		Employed by		Employed by			Employed by		Employed by						
Operator	Contractor	Operator	Contractor	Operator	Contractor	Operator	Contractor		Operator	Contractor	Operator	Contractor					
3·12	4·26	..	32·8	0·85	2·28	..	5·99	0·5	0·36	0·8	..	2·26	..	11·28	1·58	11·11	77·19
Employed by Government Agencies (approx.)																	30
TOTAL ..																	107·19

TABLE 3-2

CLASSIFICATION OF ACCIDENTS

Lost Time Only

Nature of Injuries	Occupation					Injured Members									Agency of Injury					
	Toolpushers	Drillers	Drilling Crews	Others	Total	Fingers	Hands	Arms	Toes	Feet	Legs	Head	Eyes	Body	Total	Moving Machinery	Using Tools	Handling Tubing	Falling Objects	Other Causes	Total
Sprains, Contusions, Abrasions, Cuts and Lacerations	..	..	15	..	15	2	5	..	..	1	3	..	..	4	16	..	1	7	..	7	15
Fractures	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burns	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Injuries	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Totals	..	..	16	..	16	3	5	..	..	1	3	..	..	4	16	..	1	8	..	7	16

Lost time incurred—	Man-days
Toolpushers	—
Drillers	—
Drilling Crews	227
Others	—
Total	227

TABLE 3-3

ACCIDENT MEASUREMENTS

Personnel Accident Frequency—The Number of Disabling Injuries Per 1 000 000 Man-hours

$$\text{Frequency} = \frac{\text{No. of Disabling Injuries} \times 1\,000\,000}{\text{Man-hours Exposure*}}$$

$$= \frac{16 \times 1\,000\,000}{53{\cdot}22 \times 2\,500}$$

$$= 120$$

*Man-hours Exposure = Employment Man-years Field x 2 500

Severity Rate—Days lost due to disabilities suffered related to man-hours exposure, and expressed per million man-hours.

$$\text{Severity Rate} = \frac{\text{Total days charged} \times 1\,000\,000}{\text{Man-hours exposure*}}$$

$$= \frac{227 \times 1\,000\,000}{53{\cdot}22 \times 2\,500}$$

$$= 1\,700$$

*Man-hours Exposure = Employment Man-years Field x 2 500

REPORT OF THE CHIEF INSPECTOR OF COAL MINES—YEAR 1974

THE UNDER SECRETARY, DEPARTMENT OF MINES

SIR.—I have the honour to submit herewith my report for the year ended 31st December, 1974.

The report deals with the following subjects in respect of coal mining in Queensland.

Section I.—Output and Development
Section II.—Accidents
Section III.—Electrical
Section IV.—Mechanical
Section V.—General
Section VI.—The Coal Mining Act
Section VII.—Staff

Reports submitted by the various inspectiors during 1974 have been used in the compilation of this report. The inspectors' reports will be published in full in the *Queensland Government Mining Journal* as in previous years.

WM. ROACH, Chief Inspector of Coal Mines.

SECTION I—OUTPUT AND DEVELOPMENT

Saleable coal produced in the State of Queensland during 1974 amounted to 21 085 029 tonnes and was valued at $210 758 501. The average selling price at the pit top was $10.00 per tonne.

TABLE I
Value of Saleable Coal

Division	District	1973		1974	
		Production	Price per Tonne	Production	Price per Tonne
		Tonnes	$	Tonnes	$
Southern	Ipswich	2 414 603	8.03	2 379 966	10.84
	Rosewood				
	Darling Downs	13 543	9.60	11 769	13.12
	Maryborough	69 260	9.30	64 689	11.76
Central	Mount Morgan	4 053 442	7.96	4 186 424	10.35
	Clermont	12 658 929	7.25	13 616 460	9.77
Northern	Bowen	764 866	7.96	825 721	9.27

TABLE II
Output of Saleable Coal

Division	District	Saleable Coal	Increase	Decrease	Per cent.
		Tonnes	Tonnes	Tonnes	
Southern	Ipswich	2 379 966	..	34 637	− 1·4
	Rosewood				
	Darling Downs	11 769	..	1 774	− 13·1
	Maryborough	64 689	..	4 571	− 6·6
Central	Mount Morgan	4 186 424	132 982	..	+ 3·3
	Clermont	13 616 460	957 531	..	+ 7·6
Northern	Bowen	825 721	60 855	..	+ 8·0
	Totals	21 085 029	1 151 368	40 982	+ 5·6

Coal exported during the year amounted to 15 654 162 tonnes. Quantities shipped to various countries were—Japan 13 020 134; Italy 1 135 395; Holland 548 500; Greece 273 613; France 255 005; Belgium 251 125; U.K. 170 390 tonnes.

Shipments from the three ports amounted to—Hay Point 8 582 655; Gladstone 7 030 033; Bowen 41 474 tonnes.

The total quantity exported was lower than the 1973 figure by 485 301 tonnes. Mining operations were seriously hampered in the large export mines by the January 1974 floods. Open-cut mines in Central Queensland were inoperable for varying periods due to flooding and this resulted in a considerable reduction in exports.

Table III illustrates the trend in exports over the past four years.

TABLE III

Export Trade (Tonnes) 1971–1974

Year	1971	1972	1973	1974
Exports ..	7 905 904	12 005 693	16 139 463	15 654 162

A total of 243 999 tonnes was supplied interstate during 1974 of which 222 500 tonnes were shipped to Whyalla, S.A., and 21 499 tonnes transported to N.S.W.

There was no import of coal into the State during 1974.

TABLE IV

Average Price Variation 1971–1974

Year	1971	1972	1973	1974
Price (Tonne) ..	$ 6.69	$ 7.30	$ 7.53	$ 10.00

Coke production for the year totalled 27 066 tonnes—5 864 tonnes less than the amount produced in 1973. The Bowen State Coke Works was the only producer in 1974 and supplies therefrom were mainly to Mt. Isa Mines, North Queensland.

TABLE V

Production and Price per tonne of Coke manufactured at Bowen State Coke Works

1972		1973		1974	
Tonnes	Price per Tonne	Tonnes	Price per Tonne	Tonnes	Price per Tonne
	$		$		$
26 900	25.88	32 930	30.79	27 066	To 31-8-74 35.00 From 1-9-74 44.00

Table VI shows the quantities of coal supplied to various consumers in Queensland during 1974 along with comparative figures for 1973.

TABLE VI

Major Consumers of Coal in Queensland

Consumer	1973	1974
	Tonnes	Tonnes
Electricity	3 117 780	3 376 958
Alumina Works	460 396	751 999
Metalliferous Mining	343 690	343 507
Cement Works	275 236	268 808
Paper and Board Manufacturers ..	63 048	59 330
Coke Works	57 006	55 219
Meat and Bacon Works	24 154	23 010
Hospitals	29 189	29 886
Brick and Pottery Works	22 771	15 579
Sugar Mills	14 775	16 825
Butter Factories	4 094	4 260
Gas	2 653	2 693
Others	9 412	9 967
Totals	4 424 204	4 958 041

The major use for coal in the State is electricity generation and this accounted for 259 000 tonnes more than in 1973. This consumption is expected to continue to increase in future years because of increasing demand for electrical power.

For the year under review the number of Mines which produced coal in Queensland totalled 55. During the January 1974 floods four underground mines in the Ipswich district were flooded and at year's end one of these had been partially restored. The other three mines are unlikely to be dewatered.

TABLE VII

Coal Mines Operating at 31st December, 1974

Division	District	Underground Mines	Open-cut Mines	Totals
Southern	Ipswich	8	12	20
	Rosewood ..	1	3	4
	Darling Downs	1	..	1
	Maryborough ..	2	..	2
Central ..	Mount Morgan	4	3	7
	Clermont ..	8	2	10
Northern	Bowen	3	2	5

TABLE VIII

Coal Mines which Operated during years 1971–1974

Division	District	1971	1972	1973	1974
Southern ..	Ipswich	25	17	32	25
	Rosewood ..	4	3	2	5
	Darling Downs	1	1	1	1
	Maryborough ..	5	2	2	2
	Mount Morgan	9	7	7	7
	Clermont	3	7	10	10
	Bowen	4	4	5	5
	Totals	51	41	59	55

The following tables give additional information as to the position of the Coal Industry in this State:—

TABLE IX

Average Output per Manshift (R.O.M.)

Division	District	1971	1972	1973	1974
		Tonnes	Tonnes	Tonnes	Tonnes
Southern	Ipswich	10·26	13·46	9·97	16·48
	Rosewood	4·98	4·33	5·43	4·94
	Darling Downs	4·78	4·15	4·13	3·78
	Maryborough	4·57	5·33	5·31	5·69
Central	Mount Morgan	17·37	19·65	19·19	17·91
	Clermont	86·57	37·90	34·28	35·51
Northern	Bowen	9·61	10·72	9·1	9·66

Table "X" shows the run-of-mine coal produced and the quantity of explosives and detonators used in coal.

TABLE X

Explosives and Detonators Used in Coal

Division and District	Run-of-Mine Coal	Conventional Explosives	Special Explosives	Detonators	Miss-Shots
	Tonnes	kg	kg		
Southern—					
Ipswich	3 835 225	40 676	24 881	9 281	..
Rosewood	116 989	18 263	906	30 590	..
Darling Downs	11 788	2 263	..	4 410	..
Maryborough	71 959	20 017	..	46 220	..
Central—					
Mount Morgan	5 292 366	116 124	542 220	843	..
Clermont	18 318 387	1 112 214	275 042	7 407	..
Northern—					
Bowen	215 144	365	3 400	28	..
Totals	27 861 858	1 309 922	846 449	98 779	Nil

TABLE XI

Explosives Used in Removal of Overburden

Division and District	Overburden Removed	Conventional Explosives	Special Explosives	Detonators	Miss-Shots
	Cu m	kg	kg		
Southern—					
Ipswich	4 250 863	45 277	195 571	2 102	..
Rosewood	935 419	..	..	..	..
Darling Downs	..	..	..	..	..
Maryborough	..	..	..	..	..
Central—					
Mount Morgan	30 997 598	556 609	6 422 912	293	..
Clermont	96 803 681	646 643	17 933 259	4 915	..
Northern—					
Bowen	1 045 735	1 783	182 500	430	..
Totals	134 033 296	1 250 312	24 734 242	7 740	Nil

Table XI provides details of explosives used in the removal of overburden. In all coal mines the explosives used amounted to 28 141 tonnes and the number of detonators totalled 106 519.

The total raw coal mined in 1974 was higher than that for 1973 by 3·8 million tonnes which tonneage was the increase in Clermont District. Raw Coal mined in other districts varied marginally from 1973 figures. The difference between raw coal mined and saleable coal is represented by discard and adjustment in both stockpiles and coal in transit.

The Departmental Drilling Branch continued with its programme of proving and establishing coal reserves in Central Queensland. Details of this and private drilling are given in Table XII.

TABLE XII

Coal Drilling

Division	Departmental Drilling		Private Drilling	
	No. of Holes	Aggregate Depth	No. of Holes	Aggregate Depth
		Metres		Metres
Southern	..	..	252	23 303
Central	..	..	732	32 020
Northern	95	18 713	..	..
Totals	95	18 713	984	55 323

Table XIII shows number of employees in the Coal Mining Industry at the end of the year 1974.

TABLE XIII

Persons Employed as at 31st December, 1974

Division	1972			1973			1974		
	Under-ground	Surface	Total	Under-ground	Surface	Total	Under-ground	Surface	Total
Southern—									
Ipswich	645	232	877	666	347	1 013	549	283	832
Rosewood	42	20	62	33	16	49	43	38	81
Darling Downs	10	5	15	9	6	15	8	6	14
Maryborough	64	15	79	50	11	61	48	12	60
Central—									
Mount Morgan	404	440	844	455	463	918	421	637	1 058
Clermont	567	1 129	1 696	780	1 147	1 927	497	1 993	2 490
Northern—									
Bowen	185	148	333	180	136	316	68	282	350
Totals	1 917	1 989	3 906	2 173	2 126	4 299	1 634	3 251	4 885

There was an overall increase of 586 in the total number of persons employed in the industry. The number employed in the Central Division rose by 703.

The problem of obtaining certificated personnel continued during 1974.

SECTION II—ACCIDENTS

The following table shows the number of reported accidents for the year 1974 with accident figures for previous years for comparison.

Accidents

Year	Total Employees	Fatal	Over 14 Days	14 Days and under	Total
1968 ..	2 244	2	178	340	520
1969 ..	2 270	3	178	331	512
1970 ..	2 595	1	185	240	426
1971 ..	2 883	5	192	385	582
1972 ..	3 906	24	210	409	643
1973 ..	4 299	2	198	604	802
1974 ..	4 885	4	242	982	1 118

During the period under review a total of 1 224 accidents resulted in time lost. Of this total 242 caused incapacity in excess of 14 days whilst 982 accidents were classified as having resulted in less than 14 days lost-time. The accidents reported without loss of time totalled 485.

Included in this report is a table analysing the 246 accidents which resulted in fatal injuries and those causing more than 14 days' disablement. The total of such injuries shows an increase of 48 (24 per cent.) over the 1973 figure. The miscellaneous and machinery accidents on the surface increased by 37 and 11 respectively over the 1973 figures. Whilst there are other variations, those two categories were the main cause of the increase in 1974 figures. It will be noted that the total number of employees increased during the year by 586 or 13·6 per cent. above the 1973 figure.

TABLE XVI

Classification of Accidents (Over 14 days' disablement)

Divisions	Fatal	Machinery U/G.	Machinery Surface	Falls of Ground	Truck and Wagon	Misc. U/G.	Misc. Surface	Total
Southern	1	4	11	10	12	64	27	129
Central and Northern	3	2	6	9	..	33	64	117
Totals ..	4	6	17	19	12	97	91	246

Of these 242 injuries which resulted in disablement exceeding 14 days, 129 (52 per cent.) occurred to fingers, legs and backs. A substantial number of these resulted from the handling of materials and stumbling over, or slipping on, timber and other materials lying on the mine floor. An examination of accident reports indicates that the incidence of injury could be reduced with an improvement in housekeeping and more care by personnel in the handling of materials.

Under the provisions of Section 74 of the *Coal Mining Act* 1925–1974 Mining Inquiries were held into three of the four fatal accidents. At the time of preparation of this report the Inquiry into the fatal accident which occurred in December, had not been held.

The results of the three Inquiries are summarised below:—

1. At Emerald Warden's Court on 30th May, 1974, a Mining Inquiry into the death of J. Edwin Wilson found that:
   (a) The nature of the accident was the moving off of the Torkar Shuttle Car from a stationary position where it was parked by the driver Dennis Rundle and moved forward down the gradient into the underpass where the deceased James Edwin Wilson and the three other men were working corduroying the underpass.
   (b) When the Torkar was observed moving down the incline, the deceased and the driver Dennis Rundle moved towards the approaching Torkar Shuttle car and the Torkar passed over the body of the deceased causing injuries which resulted in his death. The driver, Rundle, was rolled along the wall of the underpass and sustained injuries which resulted in his being incapacitated for work for one month.
   (c) There was a loss of pressure within the parking brake system which permitted the Torkar to move off from its stationary position.
   (d) We find that the lack of knowledge of safety procedures and pit sense contributed towards the deceased's death in that he ran towards the approaching Torkar than away from it.

   The Warden and Panel recommended that:
   (1) Where there is a restricted vehicular passage as in the underpass, provision of escape man holes should be provided;
   (2) That further efforts should be made generally to improve the training standards of all employees in the colliery industry;
   (3) That multi-cylindered brake calipers be installed on all parking brakes, at least as an interim measure until a thorough investigation is carried out into braking systems generally;
   (4) That modification of integral safety braking systems should not be made without the authority of the Mines Inspector;
   (5) That the colliery engineer (mechanical) have a statutory responsibility and control over all equipment under his jurisdiction similar to that applying in "The Open Cut Mining Rules of 1964".

2. On 2nd July, 1974, a Mining Inquiry at Clermont Warden's Court into the death of Bruce Stanley Robertson at Goonyella made the following findings:—
   (a) That the accident which resulted in the electrocution of Bruce Stanley Robertson occurred when the P & H Crane Unit CRD 17 travelling with Fly Jib attached and boom lowered became bogged beneath a 11 kV Power Line on an access road to No. 4 Dragline on the Goonyella Mine site on the 27th March, 1974, at approximately 1.35 p.m.
   (b) That efforts were made to extricate the crane from the bogged position; that the crane was towed backwards to a position where it attempted to proceed backwards under its own power and again became bogged.
   (c) It was then in a position where the top of the Jib Strut, the highest point of the crane, was directly under one of the conductors of the 11 kV Power transmission lines. When a D9 Tractor was being coupled to the crane by way of a sling and shackles, the jib strut came in contact with the conductor. The deceased, who was standing beside the crane holding on to the shackle attached to the crane received a fatal shock.

   The Warden and Panel made the following recommendations:—
   (1) It is obvious that the statutory clearance of 20 feet between conductors and the ground is inadequate for the large scale mining projects of today. It would be to the industry's advantage if it would take the initiative in this matter and tailor the height of its transmission lines to give safe clearance for the passage of the types of mobile equipment to be moving in the mine site.
   (2) All danger warning signs should include maximum height of equipment that can safely pass beneath conductors.
   (3) If any doubt exists on the ability of any piece of equipment on the job to pass safely beneath live conductors, then the practice of deadening the line should be adopted.
   (4) In the instant case one fuse had blown and the earth fault relay on the back up circuit breaker had momentarily operated, but neither device isolated the line. As a positive safety measure it is recommended that high voltage drop-out fuses be of the gang operated type and that protection relays be of a latching type.

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3. At Ipswich Warden's Court on 12th September, 1974, a Mining Inquiry was held into the death of Brian William Pocock at Southern Cross No. 9 Colliery. The findings are given below—
   (a) That Brian Pocock died as a result of injuries sustained in a fall of roof.
   (b) This fall occurred as a result of a slip in the roof.

QUEENSLAND (COAL MINES)—Table of Accidents, Year ending 31st December, 1974

Occupation

Nature of Injury	Officials	Miners	Shiftmen	Wheelers	Clippers	Roperiders	Machinemen	Others	Total: Fatal	Total: Injured
Fractures	4	9	6	..	..	..	16	14	..	49
Dislocations	..	1	..	..	..	..	2	1	..	4
Sprains and Bruises	5	22	7	..	..	..	30	26	..	90
Burns	..	1	..	..	..	..	2	5	..	8
Asphyxiation	..	..	..	..	..	..	..	..	..	..
Poisoning	..	..	..	..	..	..	..	..	..	..
Respiration	..	..	..	..	..	..	..	..	..	..
Electric Shock	1	..	..	..	..	..	..	1	1	1
Septic	2	4	..	..	..	..	5	3	..	14
Internal	1	..	..	..	..	..	3	2	2	4
Contusions and Abrasions	3	3	..	..	..	..	10	2	..	18
Cuts and Lacerations	4	10	..	..	..	..	16	14	..	44
Other	3	1	1	..	..	..	2	4	1	10
Total	23	51	14	..	..	..	86	72	4	242
Percentage based on total of 246 accidents	9·3	20·7	5·7	..	..	..	35·0	29·3	1·6	98·4

Agency of Injury — Underground (Explosives; Explosions, &c.; Falls of Ground)

Nature of Injury	Explosives: Making Up and Stemming of Shots	Explosives: Blows from Coal or Stone Projected by Shot	Explosives: Explosives Fumes	Explosives: Others	Explosives: Aggregate	Explosions, &c.: Gas and/or Coal Dust	Explosions, &c.: Asphyxiation or Poisoning by Gases	Explosions, &c.: Others	Explosions, &c.: Aggregate	Falls of Ground: At the Working Face	Falls of Ground: On Roads while Repairing or Enlarging	Falls of Ground: On Roads while Otherwise Working or Passing	Falls of Ground: Aggregate
Fractures	..	..	..	..	..	..	..	..	..	6	..	1	7
Dislocations	..	..	..	..	..	..	..	..	..	..	..	..	..
Sprains and Bruises	..	..	..	..	..	..	..	..	..	1	..	1	2
Burns	..	..	..	..	..	..	..	..	..	..	..	..	..
Asphyxiation	..	..	..	..	..	..	..	..	..	..	..	..	..
Poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Respiration	..	..	..	..	..	..	..	..	..	..	..	..	..
Electric Shock	..	..	..	..	..	..	..	..	..	..	..	..	..
Septic	..	..	..	..	..	..	..	..	..	..	..	..	..
Internal	..	..	..	..	..	..	..	..	..	1	..	..	1
Contusions and Abrasions	..	..	..	..	..	..	..	..	..	4	..	..	4
Cuts and Lacerations	..	..	..	..	..	..	..	..	..	4	..	1	5
Other	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	..	..	..	16	..	3	19
Percentage based on total of 246 accidents	..	..	..	..	..	..	..	..	..	6·5	..	1·2	7·7

Agency of Injury — Underground (Truck or Wagon; General; Total)

Nature of Injury	Truck or Wagon: While Engaged in Haulage Operations (Clipping, Spragging, &c.)	Truck or Wagon: Run Over or Crushed	Truck or Wagon: Lifting	Truck or Wagon: Others	Truck or Wagon: Aggregate	General: Falling Down Shafts	General: Materials Falling Down Shafts	General: Other Shaft Accidents	General: Machinery (in Motion)	General: Electrical	General: Miscellaneous	Total: Fatal	Total: Injured
Fractures	..	1	..	..	1	..	..	..	3	..	16	..	27
Dislocations	..	..	..	..	..	..	..	..	..	..	2	..	2
Sprains and Bruises	..	1	1	1	3	..	..	..	1	..	37	..	43
Burns	..	..	..	..	..	..	..	..	..	1	2	..	3
Asphyxiation	..	..	..	..	..	..	..	..	..	..	..	..	..
Poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Respiration	..	..	..	..	..	..	..	..	..	..	..	..	..
Electric Shock	..	..	..	..	..	..	..	..	..	..	..	..	..
Septic	..	3	..	1	4	..	..	..	..	..	6	..	10
Internal	..	1	..	..	1	..	..	..	..	..	2	1	3
Contusions and Abrasions	..	2	..	1	3	..	..	..	..	..	7	..	14
Cuts and Lacerations		..	..	..	..	..	..	..	..	..	24	..	29
Other	.	..	..	..	..	..	..	..	1	..	5	1	5
Total	..	8	1	3	12	..	..	..	5	1	101	2	136
Percentage based on total of 246 accidents	..	3·3	0·4	1·2	4·9	..	..	..	2·0	0·4	41·0	0·8	55·3

Agency of Injury — Surface

Nature of Injury	General: Machinery (in Motion)	General: Electrical	General: Miscellaneous	Total: Fatal	Total: Injured
Fractures	5	..	17	..	22
Dislocations	1	..	1	..	2
Sprains and Bruises	1	..	46	..	47
Burns	1	..	4	..	5
Asphyxiation	..	..	..	..	..
Poisoning	..	..	..	..	..
Respiration	..	..	..	..	..
Electric Shock	..	..	2	1	1
Septic	2	..	2	..	4
Internal	..	..	2	1	1
Contusions and Abrasions	1	..	3	..	4
Cuts and Lacerations	4	..	11	..	15
Other	1	..	4	..	5
Total	16	..	92	2	106
Percentage based on total of 246 accidents	6·5	..	37·4	0·8	43·1

Location of Injury

Nature of Injury	Hand	Fingers	Arm	Foot	Toes	Leg	Head	Chest	Abdomen	Eyes	Back	Shoulder	Thigh	Other	Multiple	Remarks
Fractures	2	17	4	6	3	5	..	1	..	..	1	..	..	8	2	
Dislocations	..	..	..	..	..	1	..	..	..	..	..	2	..	1	..	
Sprains and Bruises	1	4	3	9	..	14	1	..	3	..	38	7	2	6	2	
Burns	1	..	..	1	..	2	..	1	..	..	..	..	..	..	3	
Asphyxiation	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Respiration	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Electric Shock	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	
Septic	1	5	2	2	2	..	1	..	..	..	..	..	..	1	..	
Internal	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3	
Contusions and Abrasions	3	3	2	2	..	6	..	..	..	..	1	..	1	..	..	
Cuts and Lacerations	4	14	2	4	1	12	1	..	..	..	1	..	..	1	4	
Other	..	2	..	..	..	1	1	1	..	..	1	..	1	1	3	
Total	12	45	13	24	6	41	4	3	3	..	43	9	4	22	17	
Percentage based on total of 246 accidents	4·9	18·3	5·3	9·8	2·4	16·7	1·6	1·2	1·2	..	17·5	3·6	1·6	9·0	6·9	100·00

Remarks (Stating Categories of Fatal Accidents)

At South Blackwater Underground Mine on 11th February, James Edwin Wilson suffered fatal injuries when he was struck by a shuttle car.

At Goonyella Open-Cut Mine on 27th March, Bruce Stanley Robertson was electrocuted when a crane made contact with an overhead power line.

At Southern Cross No. 9 Colliery on 3rd June, Brian William Pocock was killed by a fall of roof.

At Peak Downs Open-Cut Mine on 28th December, Athol Parry suffered fatal injuries when a vehicle overturned on the haul road.

The following recommendations were made:—

(1) On encountering slips, exposed roof should be kept to a minimum.

(2) It is suggested that this be done by use of additional roof bolts longer than 3 feet; used as spot bolts.

ELECTRICAL ACCIDENTS

During the year the following accidents involving the use of electricity were reported.

Southern Division

1. A continuous miner engaged in splitting pillars at Rhondda No. 1 Colliery damaged the supply cable adjacent to the machine. The short circuit which resulted blew out from the cable and caused burns to the right leg of the machine operator. All protection operated as required. However, the cable was a non-screened type and could not be isolated by earth leakage protection before the short circuit occurred.

2. The edge of a sheet of roofing iron cut into the cable of a portable electric drill being used during erection of a building at Southern Cross No. 9 Colliery. An earth leakage protection system of 20 ma rating was operated by the fault and the person using the drill was at first unaware that he had received a slight shock. In this installation all workshop G.P.O.'s are protected by the earth leakage circuit breaker, a system which is preferable to the portable isolation transformer, which tends to be ignored by careless operators.

Central Division

1. A shift electrician at Kianga Open-cut Mine received extensive burns to the face, arms, legs and body. He had experienced trouble with the hoisting motion on the Marion 7900 dragline and wished to shut down the machine to carry out tests. As the machine was being shut down, the 7·5 mVa substation supplying the dragline tripped off.

The electrician called up his leading hand electrician by radio and together they checked the substation to ascertain the cause of the trip.

They found a quantity of transformer oil in the bottom of the oil circuit breaker cubicle. After satisfying themselves that the oil had not leaked from O.C.B., they checked more closely and found that oil was dripping from the end of a conduit which led protection cabling down from the top of the transformer. The electrician and the leading hand opened the 66 kV Stanger "Duo-Roll" isolator on top of the transformer so that they could climb up and check where the oil leak originated. They found oil leaking past bushings which lead current transformer wiring from inside the transformer case to the protection and metering outside.

The leading hand climbed down from the top of the transformer with the electrician following suit. As the leading hand reached the ground there was an extensive flash. Investigation showed that:—

(a) The 66 kV isolator had not been locked in the off position.

(b) Earths had not been applied to the transformer,

(c) The Stanger 66 kV isolator was not correctly adjusted when it was installed more than 10 years earlier.

The switching arms of the Stanger isolator must rest at 100 degrees to the horizontal and fixed contacts. The arms of this particular isolator rested at between 80 and 85 degrees and were observed to close under the action of a 20 m.p.h. wind during the investigation. The wind at the time of the accident was much stronger.

It was recommended that only electricians authorised by the Mine Electrician be permitted to carry out high tension switching, and then, only after they had received instruction on H.T. switching preferably from a Local Supply Authority Safety Officer.

2. An operator received burns to his face, neck and forearms when he reclosed an air circuit breaker on-board the 8900 Marion dragline at the Moura Open-Cut Mine.

The air circuit breaker involved in the incident controls a boom hoist motor. There are two boom hoists, motors and circuit breakers on the 8900 dragline. The reduction gearing between the motor and winch uses straight gears with a reduction which will move downwards under the weight of the boom once the brakes are released. Thus, raising or lowering the boom is a three man job—one man for each manually operated brake and another man on the raise and lower buttons for motor control. The sequence of operation has been to start both motors with their rotors locked under the action of the manually operated brakes, and then release the brakes. With this method of operation the motors and switchgear pass a current at least six times their normal full load current.

A similar accident occurred almost a year ago at which time it was suggested among other things, that electric brakes be fitted so that they would be automatically released when the motors were started. The company attempted to obtain new double-ended motors with brakes attached. However, motors of this type were not available in the required horsepower range.

Following the more recent accident, the company is required to instal enclosed A.C.B.s and contactors to safeguard operators against burns. During a subsequent inspection no modifications had been effected and the report states that the boom hoists on the 8900 dragline may not be operated until the necessary modifications have been completed.

The initial fault is in the design of gearing for the hoist. All other hoist reduction boxes incorporate a worm drive which is not "free running" and must be driven up and down.

Northern Division

1. A miner received electrical burns at Dacon No. 5 when flames came out between the flanges of a G.E.B. His injuries were not serious. An investigation showed that the accident was caused by the overloading of the equipment causing a short circuit. Because only four (4) bolts had been put into the cover, instead of the usual twenty (20), the flames were able to escape.

2. A leading hand electrician at Bowen Consolidated Coal Mine No. 2, received an electric shock when one phase of a contactor stuck in. He did not require medical attention. An investigation showed that he had failed to take the usual precautions.

MACHINERY ACCIDENTS

Southern Division

There were five incidents involving vehicles in open-cut mines and of these, two resulted in serious injury. They are described below.

1. The driver of a Euclid truck suffered the loss of a foot when he attempted to place stone beneath a rotating rear wheel. The wheel was rotating above ground level as a result of the differential case becoming lodged on a large rock.

2. A tractor scraper driver had both wrists fractured when he fell from the vehicle. The scraper was travelling downhill on an uneven road when bouncing of the vehicle apparently caused the driver to be thrown to the ground.

3. The driver of a tractor scraper lost control of the vehicle which overturned on to its side. No one was injured.

4. A large rock fell from a Euclid truck and obstructed a wheel. The truck toppled on to its side. No person was injured.

5. An International 180 Payhauler sped downhill out of control and overturned. Investigation showed that the driver had not correctly determined the degree of retardation necessary to descend the grade. No personal injury resulted.

In another incident an attendant suffered a compound fracture of his arm when it was caught between a belt conveyor pulley and a side plate.

SECTION III—ELECTRICITY IN COAL MINES

The following tables indicate where electricity and electrical machinery have been used in or about underground and open-cut coal mines during 1974.

Such tables have been compiled from annual returns submitted by the various coal mines in the Southern, Central and Northern Divisions.

Table I shows the yearly overall motor H.P. for all purposes in each Division.

TABLE I

Horsepower of Motors in Use for all Purposes

Southern Division—	
Above ground—	
Winding, Haulage and Conveying	4 241
Ventilation	1 698
Pumping	547
Air Compressors	768
Coal Cleaning and Screening	5 283
Other Purposes	313
Total	12 850
Below ground—	
Hoisting and Hauling	551
Pumping	1 001
Auxiliary Ventilation	292
Scrapers and Loaders	901
Conveyors	9 000
Coal Cutters and Continuous Miners	10 205
Shuttle Cars	5 016
Other Portable and Mobile Machinery	480
Other Purposes	110
Total	27 556

Northern and Central Divisions—	Central	Northern
Above Ground—		
Dragline, Haulage, Winders and Conveyors	52 767	67 231
Ventilation	1 954	252
Pumping	2 174	14 066
Coal Preparation	20 193	31 898
Air Compressors	1 056	1 223
Other Purposes (Rotary Drills, Workshops)	4 312	6 929
Total	82 456	121 599
Below Ground—		
Haulage	..	..
Belt Conveyors	4 566	1 520
Chain Conveyors	..	..
Shuttle Cars	4 975	1 340
Continuous Miners	9 740	3 285
Coal Cutters	..	..
Shovels and Loaders	1 951	432
Scraper Loaders	..	..
Roof Bolters	1 005	..
Other Mobile Machines	340	..
Portable Hand Drills	1	..
Pumps	1 755	85
Auxiliary Ventilation	276	..
Other Purposes	553	180
Total	25 162	6 842
D.C. Motors	1 720	
Total	26 882	

Table II shows the number of units and total H.P. used in coal mines during the year.

TABLE II

Number of Units and total Horsepower in Coal Mines

Division	No. of Units Operating in 1974	H.P. in use Above-ground	H.P. in use Below-ground	Total H.P.
Southern	1 415	12 850	27 556	40 406
Central	962	82 456	26 882	109 338
Northern	1 649	121 599	6 842	128 441
Totals	4 026	216 905	61 280	278 185

In the coal mines in the State of Queensland there are 4 026 electrical units totalling 278 185 H.P. used in coal mines throughout the State in 1974. Of this total 216 905 H.P. was on surface equipment and 61 280 H.P. on underground equipment. The above totals exclude direct current motors on the draglines and shovels which are supplied by A.C. motor generator sets, and transmission and distribution systems, switchrooms, substations, lighting and signalling installations.

Table III indicates the growth in H.P. and number of units during the period 1960–1974.

TABLE III

Utilization of Electric Power 1960–1974

Year	Units	Surface H.P.	Underground H.P.	Total
1960	1 582	12 796	7 380	20 176
1967	2 899	56 371	26 936	83 307
1968	2 466	56 046	29 532	85 578
1970	2 865	79 262	41 348	120 610
1971	3 182	104 461	45 936	150 397
1972	3 402	148 989	48 746	197 736
1973	4 204	176 291	52 911	229 202
1974	4 026	216 905	61 280	278 185

Since 1960 the number of units (electrical motors and other power consuming apparatus) has increased markedly to its present level.

These figures are indicative of not only the growth in size of the industry but also point to the increase in horsepower rating of individuial units installed. This is particularly apparent in the figures relating to surface installations and reflects the installation of large electrically operated machinery at open cut coal mine sites.

INSPECTIONS

Effective administration of the electrical rules under the *Coal Mining Act* 1925–1974 in connection with the use of electricity and electrical machinery in or about coal mines throughout Queensland necessitated routine inspections of electrical equipment installed or associated with the surface and underground installations of coal mines in the Northern, Central and Southern Divisions.

Details of such inspections are tabulated below.

District	Inspections		Miles Travelled	
	1973	1974	1973	1974
Northern	44	101	6 564	18 402
Central	118	86	22 447	20 799
Southern	207	260	17 857	22 563
Totals	369	447	46 868	61 764

The variation in numbers of inspections and miles travelled in the Divisions is mainly due to the addition of two electrical inspectors carrying out inspection duties in these respective divisions during the year. Such appointments necessitated the reallocation of mines in each division resulting in a reduction in miles travelled in the Central Division.

FLAMEPROOF TESTS

Twenty-five routine tests in accordance wih the procedures set down in Australian Standard C–98, "Electrical Equipment for Explosive Atmospheres" were carried out during the year at this Department's approved testing station sited at the University Mine, Indooroopilly. This testing station is subsidised by means of annual grants from the Department of Mines.

With grants from this Department the present testing chamber has been reconstructed in a new building and additional sampling equipment has been installed. When complete it is anticipated that the Testing Station will make application to be registered as a N.A.T.A. (National Association of Testing Authorities) registered as a testing station, the test certificates of which would be accepted on a National basis.

N.A.T.A. is an independent association of testing laboratories. It registers laboratories which meet its standards of performance and authorises these laboratories to issue N.A.T.A. endorsed test certificates.

APPROVALS

A total of 117 applications for approval relevant to the use of electrical apparatus in coal mines of Queensland were granted during the year.

Such applications, together with the associated drawings, were examined and checked for compliance with relevant Australian Standards Specifications and particular requirements of the Electrical Rules contained within the *Coal Mining Act* 1925–1974 before approval was granted.

STANDARDS MEETINGS

Regular meetings of the Queensland EL/1 S.A.A. Wiring Rules Interpretations Committee were attended during the year.

The EL/1 Committee has been active in revising Section 4 of the S.A.A. Wiring Rules, giving particular attention to metric conversion.

The various electrical industry Safety Advisory Sub-Committees and panels involved with Linesman Training, Working Procedures, Safety Measures, Safety Rules and Regulations, Resuscitation and Accident Statistics also held regular meetings throughout the year.

Of particular interest to the mining industry is the proposed training course for cable jointers, which, following representations from this Department, is to be extended to embrace persons involved in the repair of trailing cables for use in coal mines. As a S.A.A. code of practice is now available for such specialised repair, the implementation of such training course will do much to improve the standard of repair of such cables, which are so widely used in arduous conditions experienced in underground mining.

The EL/3 S.A.A. Committee, "Cables for use in Mines" was active during the year in view of the necessary change to metric sizes, and the various standards concerned with cables for use in mines are being reviewed in terms of metric conversion.

The code of practice for the repair and testing of trailing cables and feeder cables used for mining has now been finalised. It should do much to improve the safety in application of use, particularly in underground coal mines. The trend by S.A.A. towards allocation of work to various working groups, both in New South Wales and Queensland, has done much to accelerate the preparation of such documents.

The EL/14 S.A.A. Committee, "Electrical Equipment in Hazardous Locations" has also been active through its various sub-committees in reviewing Australian standards in terms of metric conversion and, in consideration of the policy, where possible, to nationalise standards throughout the world, in accordance with the recommendations of the International Electrotechnical Commission (I.E.C.).

Of particular interest is the change in the attitude towards the definition of a hazardous location. Overseas trends now suggest various degrees of hazard, allowing the use of increased safety devices such as motors of non-FLP totally enclosed construction with F.L.P. terminal boxes in areas of lesser hazard.

The I.E.C. approach has been to classify areas which are continuously and intermittently hazardous as Zone O and Zone 1 areas. Section 6 of the S.A.A. Wiring Rules, dealing with such locations, is at present subject to review in terms of such I.E.C. recommendations.

The EL/29 S.A.A. Committee, "Examination and Testing of Electrical Equipment for Hazardous Locations" has held regular meetings throughout the year to deal with S.A.A. certification of electrical equipment as a result of relevant tests carried out at the testing stations of the Sydney County Council and the New South Wales Department of Mines.

The new Australian Standard, Transformer Substations for use Underground in Coal Mines, as developed by working groups of S.A.A. Committee EL/23, "Electrical Equipment in Coal Mines" was finalised during the year, following consideration of public comment received from industry, manufacturers and statutory authorities. The implementation of this document will provide the necessary standardisation in construction of such equipment in various States, which is most desirable as far as the coal mining industry is concerned.

Another much needed code of practice for the coal mining industry is with regard to the overhaul and maintenance of electrical equipment in coal mines. Part 1 of this proposed code, dealing with flameproof equipment, is being prepared by EL/23/2 working groups from Queensland and New South Wales. The working groups are comprised of representatives from users, manufacturers and statutory authorities.

Areas of work to be proceeded with by EL/23 working groups include—

Mobile machines for use in coal mines,

Belt Conveyor Starters for use in underground coal mines, and

Lighting in an underground coal mine.

An Australian Draft Standard for Earth Fault Protection, Monitoring and Earth Fault Limitation has also been finalised by Sub-Committee EL/23/3 during the year, and will shortly be available for public review.

AREA ELECTRICAL DEVELOPMENT

During the year the following electrical development at various coal mines in each Division was reported as follows:—

Central Division

CALLIDE OPEN-CUT

The construction of a coal handling plant to handle the projected increase in tonnage of one and a half million began in the last quarter of 1974. The plant includes stacking equipment associated with two rill towers and an underground reclaiming system.

A modern workshop has also been erected on site.

MOURA No. 2 UNDERGROUND MINE

New equipment introduced into the mine was two Fox feeders and equipment was transferred from the No. 1 mine after having been overhauled.

MOURA No. 3 UNDERGROUND MINE

During the January rains and subsequent low-wall slump, the cement floor of the main switchroom was cracked and buckled. The building was braced and lifted off the cement base. A 30 feet by 15 feet steel sled was fabricated and the building was lowered into place on the sled. This new switchroom operated successfully through the year and was untroubled by the upheavals in the latter part of the year. The main switchroom will now be towed to the site of the No. 4 mine.

KIANGA OPEN-CUT

The Joy type earth continuity system is being used successfully on the high tension distribution system. This is not surprising when it is realised that this is the only open cut operating with all trailing cables of symmetrical construction.

Other open-cuts have experienced problems caused by:—

1. The un-symmetrical construction of their trailing cables.
2. Voltage surges causing nuisance tripping.
3. Unsatisfactory repairs to the pilot cores.
4. In other cases, the choice of plugs.

Kianga Coal Company purchased symmetrical cables from the commencement of mining operations and eliminated the problem of voltage surges by connecting a large capacitor across the relay coil. They have not been troubled by unsatisfactory repairs because the earth continuity protection has operated from the commencement of operations and consequently the repairs have always had to be of a high standard.

LEICHHARDT COLLIERY

The No. 1 production coal haulage winder was fitted with a man-riding enclosure on top of the skips to provide a second means of egress from the mine. So that it would not be affected by power failures, a diesel alternator was installed to supply a 50 HP emergency winder motor. This motor is smaller than the main winder motor and consequently operates at a slower speed. To obtain this lower gear ratio one of the stud shafts in the gearbox was replaced by a longer one which passed through the bearing in the gearcase sufficiently to attach a coupling. This is driven by the 50 HP AC motor. All safety devices are still operative when the emergency winder motor is running.

When the main fan motor trips off, the main power supply underground is also switched off automatically. Because of this and the fact that power is required at the control stations and at the pit-bottom of the No. 1 shaft, certain non-flameproof enclosures had to be replaced with those of flameproof design. It was also necessary to ensure that the new flameproof junction boxes and control stations, etc., which are supplied from the winder supply, have their covers interlocked so that they cannot be opened with the power on and also that the power cannot be switched back on when the cover is open. This work was programmed to be completed during the Christmas non-production period.

THIESS SOUTH BLACKWATER–LALEHAM COLLIERIES

The most interesting feature of the operations at these mines was the introduction of two new machines, namely the Dosco Roadheader and the Joy 12 CM continuous miner, which is provided with variable speed DC traction.

The diesel-electric 480 W Bucyrus–Erie dragline operated in the open cut during the year but the diesel-electric 45R rotary drill was replaced by a similar 40R which had to be thoroughly reconditioned.

UTAH BLACKWATER

A specially designed earth continuity system for use with non-symmetrical trailing cables has been operating successfully on the 1370 W dragline for the past three months and if further testing is successful, these units should satisfy regulations until all cables in service are symmetrical.

STATE ELECTRICITY COMMISSION COAL HANDLING PLANT, BLACKWATER

Construction of a plant to handle coal mined from the Blackwater reserves and destined for the Gladstone Power Station, commenced during the year.

This plant is due for completion in March, 1975.

Northern Division

BOWEN CONSOLIDATED NO. 2 COAL MINE

Bowen Consolidated Coal Mine took delivery of a Le Norse continuous miner and a Noyes hydrocar during 1974.

Several problems were encountered during the year with Siemens HT CFS units in substations. An installation problem was causing the units to be "on" when they should have been "off". Modifications to all substations using this CFS appear to have overcome the problem.

A Richardson axial flow fan capable of supplying 150 000 CFM was installed during the year. The mine now has three ventilation fans, although only two are used.

BOWEN CONSOLIDATED NO. 3 OPEN-CUT MINE

The No. 3 Mine was re-opened this year and the output has been transported to No. 2 mine for processing.

No electricity had been used in this mine until December, as all machines are operated by diesel engines. In December the 11 kV overhead lines were energised, and a 500 kVA substation was installed. This substation is used to feed the Bathhouse, offices and a mobile crushing plant.

The mobile crushing plant was commissioned during December after modifications to the mechanical and electrical sections.

Problems were encountered at this mine with the introduction of the earthing plates. Although the plates were installed in virgin ground in a proper workmanlike manner, it was found that the ohmic reading was well in excess of the minimum of 2 ohms. In order to reduce the resistance lengths of galvanised pipes had to be added to the system. These pipes were then welded to earth stakes driven into the ground, and the pipes connected to the earth plates. As the resistance was still too high, it was necessary to install a sprinkler system to saturate the whole area.

DACON NO. 3 MINE

Two new Joy shuttle cars were put into service this year, and two new conveyor driveheads were installed. Two new FLP DCB's were installed. In 1975 it is intended to replace most of the overhead supply lines on the surface with underground cables. Plans are also in hand to upgrade the protection system of this mine.

STATE COKE WORKS BOWEN

Extensions to the Coke Works were commissioned in February.

BLAIR ATHOL OPEN-CUT MINE

A new crusher was installed in October but it was found that the supply to the mine did not have sufficient capactiy to feed the new installation. As a result the C.R.E.B. are to install a larger transformer. Contractors will install cables of a larger cross sectional area, and additional switchgear.

Two P&H 2800 shovels have been ordered to assist with the mining operations. One will be for overburden removal and the other for coal.

SARAJI OPEN-CUT MINE

This mine commenced to remove overburden in July with Dragline No. 11, Dragline No. 12 came into operation in October. Dragline No. 13 should become operational early in February.

Two P&H 1600 shovels were installed during the year and they appear to be working satisfactorily.

The coal treatment plant came into operation in November.

Southern Division

NEW HOPE COLLIERY

A new 48H Lee-Norse Continuous Miner was installed early in the year in the No. 6 tunnel development.

The old 48H Lee-Norse Miner was subsequently brought out for complete overhaul. Such machine was modified to meet the requirements of the Underground Coal Mines Electrical Rules of 1971, and the reconditioned FLP enclosures were subject to satisfactory tests at the Testing Station before the machine was re-introduced into the mine.

Three new conveyor belt installations and associated starters were installed in the new tunnel development.

OAKLEIGH COLLIERY

An overhauled Joy 14 BU 10 loader was installed in the Oakleigh section and a fines cyclone plant installed.

M. W. HAENKE COLLIERY

Two Joy 10SC6 shuttle cars were commissioned and the extension of the work faces required the installation of two belt drive heads and associated equipment.

A large fan motor and starter were also installed.

BOX FLAT COLLIERIES

A Lee-Norse Continuous miner and two Joy SC6 shuttle cars were added to the equipment at No. 8 Colliery, replacing previously lost machines. A new man and supply tunnel was driven to No. 8 and a haulage unit installed.

NORMANTON COLLIERY

Lanefield Colliery washing plant was recommissioned to process coal from Normanton Open-cut mine.

SOUTHERN CROSS COLLIERIES

Two of Southern Cross' Lee-Norse continuous miners were in turn withdrawn from service and completely overhauled and rebuilt at the colliery before replacing equipment currently being overhauled. A cyclone fines plant was installed.

WESTFALEN COLLIERY

A new 150 HP Pleuger submersible pump was introduced by bore hole into the flooded underground workings and operated on a round the clock basis for de-watering purposes.

A M/C Lee-Norse Continuous Miner was overhauled and modified to meet Queensland requirements before installing below ground.

An overhauled 14BU-7 loader was also used in restoration work and a 500 kVA FLP transformer was suitably modified to function as the transportable substation to supply the section.

A new 125 HP Section conveyor Belt and associated FLP switchgear were installed during the year.

SECTION IV—MECHANICAL

DIESEL ENGINED VEHICLES IN UNDERGROUND COAL MINES

Routine tests have been carried out on diesel engines for use underground. It has been noted that there is now a better understanding by colliery maintenance staff of the necessity for the 28–day raw gas tests. It is disturbing to note that in many mines scant attention is paid to the cleanliness of diesel vehicles. It cannot be too strongly stressed that serious consequences can arise from allowing vehicles to accumulate dirt and extraneous matter. There are now 109 approved diesel engined vehicles in use underground. This year 15 new diesel vehicles were introduced underground.

Three fires have been reported on diesel vehicles whilst in use underground. Any fire underground is a very serious matter and action has been taken to prevent a recurrence of such outbreaks. It is fortunate to record that no injuries to persons were sustained and the fires were quickly brought under control. The fires did however highlight the need to ensure that all vehicles carry efficient fire extinguishers.

The first fire resulted from a transport vehicle being driven whilst the parking brake was engaged. In an effort to avoid a recurrence a fail safe device has been fitted to this vehicle.

The second fire was of a more serious nature and it took some time to bring it under control. It was evident that frictional heating had occurred between the radiator fan and the main casing of a diesel shuttle car. Due to the design of this vehicle it was extremely difficult to attack the fire at its source. Consequently changes have been carried out in the design of the vehicle. This modification will allow easier access for the purpose of cleaning.

The third fire occurred on a personnel vehicle. This fire was attributed to the brakes seizing due to the vehicle running through deep mine water. It is essential that all roadways be kept clear of a build up of water. If vehicles have to run through such places proper measures should be taken to ensure that the exposed parts of the vehicle are kept clean.

It is pleasing to report that better attention is being paid by manufacturers to ensure that new diesel engines meet the Department's requirements. One manufacturer has purchased a portable dynamometer and this greatly assists in testing engines.

The use of Fire Resistant Brake Fluid has been implemented and most underground mines are using such fluid. Further work is being carried out in this area with regard to the establishment of a suitable standard.

Most underground mines use diesel engined vehicles in one form or another to transport men and materials in and out of the mine. These vehicles are in almost continual use and require planned maintenance to ensure safety in operation.

ELECTRICAL SHUTTLE CARS

Further work has been carried out on the application of a fail safe or dead man brake to electric shuttle cars. The development of such a brake is not an easy task but it is hoped that such a brake may soon be developed. On vehicles used underground and particularly on steep grades which exist in the Ipswich mines, an efficient braking system is necessary to cope with all emergencies.

WINDING AND HAULAGE

Only two coal mines in the State use vertical shaft winders. Leichhardt Colliery has a friction winder on each of its two shafts. The other vertical shaft winder is at Rhondda Colliery which uses a parallel drum compressed air driven winder.

At Leichhardt Colliery an emergency winding system has been commissioned. Rope capping, rope changing and non-destructive rope tests have been successfully carried out. The winding ropes on the service winder have been changed after their two years statutory life. Detailed examinations of these ropes are being carried out. Rules for Friction Winders have been issued this year and will be incorporated in the *Coal Mining Act* 1925–1974.

No injuries or occurences have been reported concerning haulages. Ropes of all man-riding haulages in use in underground coal mines are tested every six months at the Inspector's office in Ipswich and Rockhampton. Two new haulages have been commissioned for use in underground operations. Particular attention has been paid to the safety features of haulages and the brake systems have been periodically tested for efficiency.

COMPRESSED AIR

No fires have been reported from the use of air compressors on the surface or underground. All underground compressors have been inspected to ensure protection from high air and oil temperatures and from oil loss. Particular attention has been paid to the introduction of new compressors both on the surface and underground. With the increased use of mobile stone dusting units underground the use of compressed air has also increased. Continued vigilance is required on every aspect of the installation, operation, regular testing and maintenance of compressors.

CONVEYORS

With the increase in use of conveyors particular attention is drawn to the proper maintenance of such equipment. On inspections underground several instances have been noted of damaged or stuck conveyor rollers. Proper attention must also be paid to loading and transfer points to minimise spillage. Guarding of conveyors at points of danger is most important. This is a continual problem as in many cases after maintenance work is carried out on conveyors, guards are not replaced. It is recommended that all persons concerned with the operation of conveyors in coal mines thoroughly study and implement the Conveyor Belt Rules 1964.

Those responsible for the design and erection of guards on conveyors are advised to consult the S.A.A. Conveyor Safety Code CZ15–1971. Inspections have been carried out at coal preparation and handling plants with special regard to guards on conveyors. No fires have been reported in connection with the use of conveyors underground. Details on personal injuries sustained with conveyors are detailed in the appropriate section of this report.

OPEN-CUT COAL MINES

Inspections of open-cut coal mines have revealed several dangerous practices which in some instances have resulted in injuries to personnel.

The practice of driving machines in open-cut mines without using safety belts is to be deplored. Drivers should be warned of the inherent dangers of such action. Of the occurrences reported it has been found that where vehicles were involved the speed of the vehicle at the time of the accident was excessive. Due regard should be paid to all the conditions operating whilst the vehicle is being used. Particular attention has been paid to the condition of the tyres on all vehicles, in particular to those on haul trucks.

A severe storm at Peak Downs open-cut mine caused the Radial Stocker to collapse. No injuries to persons were sustained but the stacker was damaged beyond repair. It was recommended that trapped shoes be fitted to the wheels of the stacker to anchor them to the rails. The stacker was fitted with brakes to the wheels but these were ineffective in such circumstances.

APPROVAL OF MECHANICAL EQUIPMENT

During the year approval was granted for various items of equipment. Several mines have carried out construction of their own equipment and assistance has been given to them in this regard. It is very disturbing to note that spare parts for most types of equipment are becoming increasingly hard to obtain. Several instances have been noted where alterations or attachments have been carried out on equipment without prior approval. A direct consequence of such action has been referred to in the fatal accident section of this report.

STANDARDS ASSOCIATION

A sub-committee was formed out of committee ME/18—Mining Equipment. This committee and sub-committee has been dealing with the revision of the following standards:—ASM3 1·5% Manganese Steel for Colliery Tub-Skip or Mine-car drawbars, Shackles and Couplings and Detaching Hooks, ASCM1–1951. The Design, Construction, Maintenance and Inspection of Colliery deaching hooks and ASCM–2–1956 Construction and Maintenance of Colliery Cage Shackles and Bridle chains.

A proposed standard to cover the above Standards has been issued to industry for comment. The committee are considering other items of mining equipment to be covered by relevant standards. The department is actively engaged in the above committees.

GENERAL COMMENTS

Further attention should be paid to the proper training of drivers of underground vehicles. With the increase in use of underground vehicles it is now even more impressive that drivers be fully conversant with the vehicles' safety features.

Whilst analysing injuries it is evident that they do not just happen but are caused. Many injuries can be prevented by the adoption of safe engineering and safe working methods.

Intensive mechanisation continues to emphasise the importance of planned maintenance. Such schemes require suitably trained engineering staff which can only be obtained by education and practical training. There is also a need to emphasise on all mine personnel that safety is largely a personal responsibility.

TABLE 1
UNDERGROUND MINES
Details of Major Installed Equipment as at 31st December, 1974

Machines	Total No.	Total Hp
Continuous Miners	49	15 085
Coal Loaders	16	896
Coal Cutters	15	916
Roofbolters	28	856
Shuttle Cars	102	11 412
Man and Supply Vehicles	43	2 570
Locomotives	13	465
Winders	5	3 405
Ventilating Fans	33	3 032
Auxiliary Fans	31	299
Coal Crushing Plants	12	1 627
Coal Washing Plants	12	3 290
Pneumatic Picks, Bolters, &c.	52	232
Conveyor Belt Driveheads	133	13 217
Scraper Loaders	26	1 079
Compressors	30	1 380
Water Pumps	110	1 682
Trucks	22	1 507
Mobile Machines	27	1 256
Miscellaneous	37	246
Haulage	28	1 777

TABLE 2
OPEN-CUT MINES
Details of Major Installed Equipment as at 31st December, 1974

Machine	Total No.	Total Hp.
Draglines	17	82 662
Shovels	18	11 361
Overburden Drills	25	5 866
Coal Drills	19	2 263
Coal Haulers	113	38 078
Light Trucks	61	3 706
Front End Loaders	48	12 428
Dozers	104	31 903
Graders	24	3 880
Scrapers	37	14 103
Cranes	41	2 200
Water Trucks	30	5 710
Fire Units	2	310
Explosives Vehicles	22	2 296
Coal Crushing Plants	19	5 617
Coal Washing Plants	9	45 248
Compressors	71	3 479
Water Pumps	89	10 492
Conveyor Belt Driveheads	74	20 962
Miscellaneous	146	20 376

SECTION V—GENERAL

JANUARY 1974 FLOODS

Severe flooding occurred throughout the State in January. In the Southern Division four underground mines were completely inundated by flood waters. These were Haighmoor Extended, Moreton/Rylance, Aberdare No. 8 and Westfalen No. 3. Of these only Westfalen No. 3 has been de-watered and at year's end some restoration work had been effected belowground.

In the Central and Northern Divisions open-cut operations were seriously hampered by the floods, but the effect on underground operations was relatively minor.

INCIDENCE OF MINE FIRES/HEATINGS

Inspectors reported one spontaneous heating in each of the three Divisions. At Normanton No. 1 in the Southern Division sampling by the Inspector revealed an advanced heating in a sealed area. Mining belowground was discontinued and the heating which was relatively close to the surface was dug out by open cutting. In the Central Division spontaeous heating occurred at Laleham No. 1 Mine between a main intake and a main return airway. Early detection enabled control of the heating by grouting and sealing. In the Northern Division a heating was detected in a goaf area at Dacon No. 3 Mine. Several seals were erected and the heating was contained. The area has since been flooded.

Three fires occurred on diesel engines belowground. These are discussed in Section IV of this Report.

FALLS OF GROUND AND SUBSIDENCE

No major fall of ground was reported from underground Mines. There was one case of surface subsidence at a disused shaft at Old Whitwood Colliery in the Southern Division. The shaft had apparently been sealed previously some 30 feet below ground level. Following the subsidence the void was satisfactorily stowed.

Problems with the slumping of the high wall were experienced at one open cut mine in the Central Division. Suitable precautions were adopted to deal with the situation.

VENTILATION AND GASES

The standards at most mines complied with Statutory requirements. However, inspections revealed the need in a few cases, for action by the Inspectorate to improve ventilation. No gas ignitions were reported during the year.

In the case of two mines, Inspectors reported difficulty of ensuring adequate ventilation as a result of roof falls in return airways.

Floor heave and other manifestations of pressure at Leichhardt Colliery have been accompanied by a flow of methane—at times necessitating the cutting-off of electric power. There were similar indications of pressure at Moura No. 2 at the year's end. "Bumps" there were accompanied by methane emission.

ROADWAY DUST AND TREATMENT WITH STONEDUST

Generally roadways were systematically treated with stonedust. Trickle dusters were used on a regular basis for treating return airways. However, there were some instances where, following Departmental sampling, Inspectors found it necessary to take action because of inadequate treatment.

RESPIRABLE DUST

Situations requiring action by the Inspectorate were few but were sufficient to indicate that constant attention must be paid to the work of dust suppression. Sampling of atmospheres in underground and surface mines was carried out by Department samplers.

WATER INRUSH

There was an inrush of water into workings at Rhondda No. 1 Colliery from discontinued workings in an adjacent Mine. Investigation revealed a collapse of strata adjacent to a fault. There was no-one in the mine at the time of the inrush. The incident was investigated by the Inspectorate and precautions taken to avoid recurrence.

MINES RESCUE STATIONS

The three Stations at Booval, Collinsville and Blackwater operated satisfactorily. The training gallery planned for Blackwater is expected to be finalised during 1975.

All three Stations provided educational programmes and maintained a state of preparedness throughout the year. Brigade teams from all centres competed at State and Station competitions. Central Queensland took first place in the Queensland Competition and second place in the Interstate Contest between New South Wales and Queensland teams.

DEPARTMENTAL EXAMINATIONS

Examinations were conducted at various Centres during 1974.

The successful 1974 candidates are listed below—

First Class Mine Manager's Certificate of Competency (Coal Mines)—P. R. Anderson.

Second Class Mine Manager's Certificate of Competency (Coal Mines)—E. Dillon, K. G. Cooper, R. Boughen, P. R. Sanderson, J. J. Cuskelly, B. J. Byrne.

Limited Mine Manager's Certificate of Competency—J. R. Brett, W. M. McIntosh, T. J. Patterson.

Approval (First Class Mine Manager's Certificate of Competency (Coal Mines))—J. T. Jeffreys, W. E. Lewis, E. Holmes, D. J. Wilson, G. A. Gibson.

Approval (Second Class Mine Manager's Certificate of Competency (Coal Mines))—S. R. Strachan, R. G. Barker, E. T. Evans, G. A. Gibson.

Deputy Certificate—G. A. Roberts, R. W. Scott, P. J. Pocock, L. O. Jones, A. J. Prigg, N. L. Goodfellow, K. Dyer, J. J. Cuskelly, J. A. Quinn, C. F. Morris, G. D. Wright, C. J. Glazbrook, G. Abraham, R. L. Schreiweis, M. E. Madden, D. M. Wilkinson, F. K. Bird, M. T. Best, R. A. W. Bell, H. B. Pickering.

Approval (Deputy Certificate)—E. T. Evans, J. K. Holdom, T. A. Wilson, J. K. Hollingworth, H. J. Booth, K. E. Allison.

Open-cut Examiners Certificate—S. A. Dunne, A. H. Dowse, D. F. Fletcher, J. G. Nohlmans, L. B. Stitz, S. T. Marton, G. A. Price, E. J. Donaldson, C. J. Gallagher, A. E. Campbell, R. A. Beatty, R. M. W. Cameron, W. T. Mander, W. Komdeur, C. G. Butterfield, C. W. L. Beutel, N. S. Gehrmann, E. A. Phillips, H. D. Yarrow, W. J. Mortimer, R. J. McConnell, J. R. Coleman, B. P. Charlton, A. W. Grunwald, M. Kerr, J. R. Firth.

Open-cut Examiners Certificate (Restricted to Westfalen Open-cut)—I. J. Howell, S. D. Thomas, G. W. Kathage.

Open-cut Examiners Certificate (Restricted to South Blackwater (Laleham) Open-cut)—G. L. Belpitt, R. J. Ramsay.

Mine Electrician Certificate—N. LcM. La Garche, K. G. Crone, R. H. Smith, W. G. Gifford, H. W. Brown, G. A. Jensen.

Approval (Mine Electrician Certificate)—P. Thompson.

Mine Surveyor Certificate—K. R. Dawson, D. W. Barrett, C. T. Suttle, D. L. Greenaway, R. W. Davis, J. J. Dowling, S. T. Bushell, D. J. Vella (open-cut), D. C. Harrold, M. R. Sturgess.

Approval (Mine Surveyor Certificate)—V. Prociv, G. A. Gibson, W. D. Watson, R. E. J. Baxter.

Winding License—P. J. Wass, W. H. Nunns, J. A. Robertson, G. Marrone.

INDUSTRY EXPANSION

The trend of expansion of the Industry continued in 1974.

At the end of the year 29 Authorities to Prospect were held in Central Queensland over an aggregate area of 5 734 square miles. The number of Authorities held in other parts of Queensland at year's end was 43 over a total area of 8 561 square miles.

Prospecting continued in Southern, Central and Northern Divisions throughout 1974 with the numbers of Authorities to Prospect at year's end totalling 72—compared with 40 at the end of 1973. Departmental drilling was confined to the Northern Division.

SECTION VI—COAL MINING ACT

During 1974 draft Regulations were prepared on mine roadway dust, respirable dust, mine ventilation and machinery. This work has necessitated considerable research in order to bring the coal mining legislation in line with generally accepted international standards.

Discussions were held with the Division of Occupational Safety (Department of Industrial Affairs) with regard to approval and inspection of machinery used in open cut coal mines. The object of these discussions was to prepare legislation applying to open cut equipment for inclusion in the Coal Mining Act and to the standards used by the Division of Occupational Safety.

It is planned to finalise this new legislation during 1975.

SECTION VII—STAFF

During the year a second Mechanical Inspector of Coal Mines joined the Inspectorate and is stationed at Mackay. Inspectors now total twelve and are deployed as follows:—

BRISBANE—Two Inspectors of Coal Mines, One Mechanical Inspector of Coal Mines.

BOOVAL—Two Inspectors of Coal Mines, Two Electrical Inspectors of Coal Mines.

ROCKHAMPTON—One Inspector of Coal Mines, One Electrical Inspector of Coal Mines.

MACKAY—One Inspector of Coal Mines, One Electrical Inspector of Coal Mines, One Mechanical Inspector of Coal Mines.

Two Dust Samplers were appointed during the year for the purpose of check sampling mine roadway dusts and the sampling of mine atmospheres to determine respirable dust concentrations. Both functions are vital to assist the Inspectorate in their duties relating to safety and health. Their work has proved to be of value in coal mines throughout the State.

Inspectors travelled an aggregate of more than 160 000 miles to carry out 1 436 inspections. Approximately 10 000 miles were travelled to carry out the sampling of mine dusts.

I take this opportunity of recording my appreciation of the efforts of all Coal Mines Inspectorate personnel at Brisbane and the three District Offices.

I also wish to thank the Director and Staff of the Government Chemical Laboratory for their continued assistance and co-operation during 1974.

Finally I wish to record my appreciation and thanks to yourself as the Under Secretary for Mines, the Assistant Under Secretary, Administration Staff, and all other officers and staff generally at Head Office who have assisted this section so admirably and efficiently during the year.

W. ROACH, Chief Inspector of Coal Mines.

ANNUAL REPORT OF THE GEOLOGICAL SURVEY OF QUEENSLAND FOR THE YEAR 1974

J. T. Woods, Chief Government Geologist
H. G. S. Cribb, Deputy Chief Government Geologist
T. H. Connah, Assistant Chief Government Geologist
W. L. Hawthorne, Assistant Chief Government Geologist

The activities of the Geological Survey during the year emphasised its increasing involvement in relevant aspects of future planning at interdepartmental level. This applied particularly to resource assessment of economic minerals and extractive materials as a basis for future urban and industrial development of the State, while recognizing environmental constraints and alternative land usage. The growing demand for investigations in these fields resulted in the organization of a separate section of the Geological Survey to deal specifically with urban and environmental geology and this became fully effective towards the end of the year.

The growth of fields of applied geology in the Survey has enabled more effective integration of its work with other activities of the Department of Mines. This has been achieved by ready and effective co-ordination between the several specialist sections of the Geological Survey.

However, overcrowding and other unsatisfactory aspects of accommodation of staff housed in the present building are felt to limit efficiency and hamper further re-organization of the Geological Survey. It is considered desirable to integrate more fully the work of the Coal Section, with present headquarters at Redbank, with other sections operating from Brisbane.

The Core Library at Redbank has been unable to accommodate all cores, worthy of preservation, which have become available to the Department on cessation of the relevant company exploration. Any delay in proceeding with the construction of the new repository for cores and other geological reference collections at Zillmere, for which planning is now complete, will result in further deterioration of this function of the Department.

The Coal Section continued exploratory drilling in the Bowen and Galilee Basins. In the second half of the year, emphasis was changed from coal prospecting and stratigraphic studies that would delineate potential areas to the upgrading of coal reserves to indicated status. Drilling rigs were concentrated to expedite this work and provide greater economy of operation. In the North Central Bowen Basin, large reserves of underground coking coal have been inferred in four seams around Moranbah township, and encouraging results have been met at Parrot Creek. Drilling is continuing at Roper Creek East and Picardy. In the South Central Bowen Basin, substantial reserves of both coking and non-coking coal have been established at Emerald. Drilling will be continued at Oaky Creek and Togara. The work of tracing seams northwards in the Galilee Basin continued under cover of Tertiary deposits. Petrographic studies were continued.

The Economic Geology Section continued appraisal of limestone resources in eastern Queensland and extractive material surveys in the Moreton Region. Investigation of metalliferous deposits included diamond drilling of two low-grade disseminated copper deposits. A detailed literature study of bulk low-grade copper-molybdenum deposits was made and an area was selected for field investigation. Survey of extractive materials in the Brisbane area was completed and a report, accompanied by preliminary resources maps, was submitted in August. Mineral resources studies were made in connection with environmental impact reports on several dam sites. A survey of activity on the opal fields in south-western Queensland was undertaken.

The District Geologist, Charters Towers has continued to provide information and advice to numerous mine operators in North Queensland. With an addition to the geological staff he has been able to commence a survey of limestone resources in this district, commencing in the Chillagoe-Mungana belt.

The Engineering Geology and Hydrogeology Section continued geological investigations for civil engineering projects undertaken by Government and semi-governmental authorities. These included water supply schemes, power station sites, railway surveys, and stability problems. Groundwater investigations, largely financed by the Water Resources Investigation Trust Fund, were continued.

The major effort of the Regional Mapping Section was directed towards semi-detailed mapping in the Caboolture 1:100 000 Sheet area which marked commencement of coverage of the Moreton Region at this scale. A second project was to provide a map at 1:500 000 scale to replace the earlier map of the Moreton District and surrounding areas at a scale of 6 miles to an inch. Preliminary work has also begun to map the Wide Bay and Sandy Cape Sheet areas, thus completing coverage of the State by maps at 1:250 000 scale. Regional mapping, carried out jointly with the Bureau of Mineral Resources, was continued in the Cloncurry–Mount Isa and Georgetown districts where mineralized areas are being re-mapped at 1:100 000 scale. The Carpentaria Basin project is approaching completion.

Systematic mapping of Moreton Bay was continued by the Marine Geology Group. Marine seismic equipment was employed, and a shallow penetration coring device provided undisturbed samples which allowed interpretation of results.

An environmental study of the Pine Rivers Shire was undertaken as a pilot study aimed at providing an inventory of geological data required for land use planning. Progress was expedited by the concurrent semi-detailed regional mapping of the area. Reports were prepared for environmental impact studies on a number of dam sites and other development proposals.

The activities of the Petroleum Geology Section comprised regional stratigraphic investigations supported by drilling and sedimentologic studies. In the Bowen Basin, core drilling was initiated in the Warrinilla area to investigate Late Permian sandstone units which carry some gas. In the Galilee Basin, it was designed to establish the stratigraphic relationship of the Late Palaeozoic units of the Denison Trough, the Springsure Shelf, and the Koburra Trough. Stratigraphic drilling was also begun in the northeastern sector of the basin. Special provision of funds late in 1973 allowed deep stratigraphic drilling by contract at two sites in the Aramac area. Drilling operations were carried out in accordance with petroleum drilling practice under Departmental supervision. Although petroleum in significant amount was absent, these bores yielded much useful stratigraphic information.

The Palynology Section continued both basic studies to provide fundamental knowledge of microfloras for the establishment of reference sections and comparative examinations to solve local stratigraphic problems. Priority was given to studies of the microfloras of the Bowen and Galilee Basins in which drilling made available entire thicknesses of strata for detailed study. Projects were also based on the Callide Coal Measures of Triassic age and the Jurassic Injune Creek Group in the Surat Basin.

In the Palaeontology Section, Permian macrofossil and microfossil distribution in the Bowen Basin is being studied to resolve difficulties of correlation and apparent conflict with palynological evidence. Studies of Tertiary and Recent foraminiferal faunas allowed preliminary correlations between the Capricorn Basin oil wells and Anchor Cay 1 in the Papuan Basin which showed that the sedimentary break between Eocene and late Oligocene is of major regional importance. Work was completed on examination of the microfaunal content of sediment samples from Moreton Bay which suggests that microfaunal distributions may provide information on environmental effects of physiographic and chemical changes. Investigation of ostracod-bearing oil shales at The Narrows is directed at determining environmental trends which may assist current exploration.

The Geophysics Section continued to provide services to supplement the geological investigations undertaken in engineering geology, hydrogeology, economic geology and marine geology. Marine seismic reflection profiling was initiated in Moreton Bay and the possibility of determining the extent of coked coal *in situ* was investigated.

Following a decision to take greater advantage of the various computer facilities available to the Geological Survey an officer was appointed to investigate needs and requirements, design systems and formulate proposals.

Geochemical investigations in the Rockhampton 1:250 000 Sheet area were completed following further sampling to investigate some apparently anomalous results. It was felt that the resulting maps provided adequate resolution to materially aid mineral exploration and land utilization studies. Extension of the work southwards into the Monto Sheet area was begun.

The public demand for the services of the mineralogical laboratory and the Department's free assay scheme showed a further decline, but enquiries concerning gem occurrences continued at a comparable level.

STAFF

The following changes in staff were made during the year:—V. Palmieri was promoted to Senior Geologist; and J. E. Martin to Geologist, Division I.

Appointments were made as follows:—I. G. Moore, Geophysicist, Division I; E. M. Baker, W. Cooper, G. McClung, D. L. Trezise, D. J. Horton, L. J. Hutton and A. G. Galligan, Geologists, Division II.

Resignations were accepted from A. Davis, Senior Geologist; H. Schwarzbock, J. D. Smith, V. Prouza and C. F. V. Swarbrick, Geologists, Division I; and P. J. Slater and W. J. Park, Geologists, Division II.

A scholarship was awarded to J. E. Doherty to complete study at the University of Queensland for the degree of Bachelor of Applied Science (Geophysics).

CONFERENCES AND SYMPOSIA

J. T. Woods attended the Conference of Chief Government Geologists held in the Northern Territory in June. In March, with K. W. Wolff, he had represented the Department at the eleventh meeting of the Technical Committee on Underground Water, Australian Water Resources Council, held at Toowoomba and followed by a seminar in Brisbane. In July he took an active part in the Annual Conference of the Australasian Institute of Mining and Metallurgy held in Queensland. He also attended a Seminar on Oil Pollution and an Advanced Training Course in Remote Sensing. In September, with W. L. Hawthorne, he presented a paper to the Institute of Fuel Symposium—Economy in Energy. In November, the Chief Government Geologist attended the 8th World Mining Congress held at Lima, Peru and undertook a study tour of porphyry copper deposits in that country.

In October, W. L. Hawthorne attended a seminar in Sydney on Microfilm Information Systems and in November a seminar at the Australian Academy of Science, Canberra on Energy Resources in Australia—Petroleum–Coal–Uranium.

In May, at Canberra, K. W. Wolff attended the First Water Management Workshop organized by the Australian Water Resources Council. He also contributed a paper to the regional conference of the Australasian Institute of Mining and Metallurgy at Mount Isa in August.

R. J. Allen presented a paper "Hydrocarbon significance of Upper Palaeozoic sediments in the Koburra Trough, north-eastern Galilee Basin" to the conference of the Australian Petroleum Exploration at Perth in March.

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R. J. Allen presented a paper "Hydrocarbon significance of Upper Palaeozoic sediments in the Koburra Trough, north-eastern Galilee Basin" to the conference of the Australian Petroleum Exploration Association at Perth in March.

R. W. Day presented a paper at the specialist symposium on "Precision in Correlation" conducted by the Geological Society of Australia at Hobart in February, its title being "Zonation of the Lower Cretaceous of the Great Artesian Basin".

As Departmental representative, J. W. Laycock contributed a paper to the Royal Society of Queensland and ANZAAS Symposium on North Stradbroke Island held at Point Lookout in June. Contributions on the same subject were made to the Institution of Engineers, Australia and to the Technical Committee on Underground Water seminar in March. He also attended a training course in Remote Sensing in October.

G. W. Hofmann attended the summer school of the Royal Australian Planning Institute on "Planning and the Environment" held in Brisbane in October and also a training course in Remote Sensing.

W. G. Whitaker presented a paper at a symposium on Tectonics and Structural Geology at Brisbane in July.

In September, M. A. Randal attended a workshop on the GABSIM Hydrological Model held at Canberra.

I. G. Moore presented a paper to the Sixth Australian Computer Conference held in May at the University of New South Wales, Sydney.

H. Hekel attended the Challenger Centenary Deep Sea Drilling Symposium held at Macquarie University, Sydney in August.

A workshop on Microscopy and Photomicrography, held in Brisbane in March, was attended by G. McClung.

In July, W. H. Koppe attended a workshop course on Coal Exploration and Mining conducted by the Australian Mineral Foundation in Sydney.

R. D. Huber attended the Terraprobe Summer School held at the West Australian Institute of Technology, Perth in January. He also represented the Department at the Circum-Pacific Energy and Mineral Resources Conference held at Honolulu in August.

I. Heath attended a Motorola Range Positioning Systems Training Course in Sydney in July.

COMMITTEES, ETC

Geological Survey representation on scientific bodies was as follows:—

25th International Geological Congress—
- Advisory Committee—J. T. Woods.
- Queensland Excursions Committee—R. W. Day, I. H. Wilson.

Australian National Committee for World Petroleum Congress—J. T. Woods.

Great Barrier Reef Committee—J. T. Woods.

Technical Committee Underground Water—J. T. Woods, H. G. S. Cribb, and K. W. Wolff.

T.C.U.W. Sub-Committee on Data Storage and Handling—J. W. Laycock.

Standards Association of Australia (Queensland Panel on Coal)—D. C. Mengel.

Interdepartmental Committee on Aerial Photography—East Coast—G. W. Hofmann.

Interdepartmental Committee on Environmental Impact Evaluation of Damsites—G. W. Hofmann.

Interdepartmental Committee on the National Estate—G. W. Hofmann.

Interdepartmental Town Planning Committee for Shire of Torres—W. G. Whitaker.

University Mineral Industry Advisory Committee—J. T. Woods (Chairman).

Mineral Industries Advisory Committee on Technical Education—W. L. Hawthorne.

Coal Processing Sub-Committee of the National Coal Research Advisory Committee—W. L. Hawthorne.

International Union of Geological Sciences Commission on Stratigraphy, Sub-Commission for the Stratigraphic Lexicon. "Contact geologist" for Queensland Carboniferous—H. R. E. Staines.

Queensland Environmental Control Council—Executive Committee and Land Use Committee—J. T. Woods.

Geological Society of Australia, Queensland Division—
- Hon Secretary—C. G. Murray.
- Committee—K. R. Warner, W. G. Whitaker.
- Geological Training Sub-Committee—J. T. Woods.
- Stratigraphic Nomenclature Sub-Committee—H. R. E. Staines.
- Field Conference Committee—C. G. Murray, W. G. Whitaker.
- Tasman Geosyncline Symposium Sub-Committee—J. T. Woods.
- Preservation of Geological Monuments—N. J. de Jersey, W. F. Willmott.

Australasian Institute of Mining and Metallurgy—
- Editorial Panels, "Economic Geology of Australia and Papua–New Guinea"—J. T. Woods, T. H. Connah, and W. L. Hawthorne.
- Excursions Organiser, Southern Queensland Conference Committee, 1974, Annual Conference—R. W. Day.
- Symposium on Mine Fires—D. C. Mengel.

Australian Geomechanics Society, Queensland Group Committee—J. K. Findlay.

LIBRARY

Use of the Library's facilities is summarized statistically, with 1973 figures for comparison:—

	1974	1973
Internal loans	14 237	11 140
Inter-library loans	354	189
Circulation	8 268	9 266

During flooding of the Brisbane River in January, water entered the Library which is situated on the ground floor of Mineral House. No loss of publications was occasioned because of the voluntary assistance given by Departmental staff during the holiday weekend.

PUBLICATIONS AND RECORDS

1. The following reports and papers were issued:—

(a) *Geological Survey Publications*:—

No. 358. Origin of some Cambrian Bedded Cherts and other aspects of silicification in the Georgina Basin, Queensland. P. J. G. Fleming.

No. 360 (Palaeont. Paper 34). Aptian Ammonites from the Eromanga and Surat Basins, Queensland. R. W. Day.

No. 361 (Palaeont. Paper 35). Early Jurassic Miospores from the Upper Evergreen Formation, Hutton Sandstone and Basal Injune Creek Group, Northeastern Surat Basin. J. L. McKellar.

(b) *Geological Survey Reports*:—

No. 60. Mineral Resources of the Kilkivan District. J. H. Brooks, J. N. Syvret and J. D. Sawers.

No. 81. Departmental Diamond Drilling Programme—Cracow Goldfield. J. H. Brooks.

No. 82. Neardie Antimony Deposits, Gympie. J. E. Siemon.

No. 83. Oil Shale Resources of Queensland. C. F. J. Swarbrick.

No. 84. Geology of the Mundubbera 1:250 000 Sheet Area. W. G. Whitaker, P. R. Murphy and R. G. Rollason.

No. 85. Copper Mining in the Cloncurry and Mount Isa Mining Fields, 1971. N. J. Krosch and J. D. Sawers.

No. 86. Correlation and Environmental Trends of the Subsurface Tertiary Capricorn Basin. V. Palmieri.

(c) In *Queensland Government Mining Journal*:—

(i) Petrographic Studies and Evaluation of a Coal Seam at Kemmis Creek. J. W. Beeston. January, pp. 452-455.

(ii) Araucarian Wood Structures Preserved in a Clarain Band in Departmental Borehole Togara N.S. 34, Central Queensland. J. W. Beeston. January, pp. 455-456.

(iii) Stratigraphic Drilling Report—GSQ Mitchell 1. C. I. Wallin. February, pp. 41-47.

(iv) Aluminium. March, pp. 94-102.

(v) Upper Palaeozoic Invertebrate Macrofossils in the Neranleigh–Fernvale Beds. P. J. G. Fleming, R. W. Day, C. G. Murray, and W. G. Whitaker. March, pp. 104-107.

(vi) Reserves of Black Coal. March, pp. 108-109.

(vii) Petrographic Studies and Evaluation of a Coal Seam at Lake Elphinstone. J. W. Beeston. April, pp. 126-127.

(viii) Departmental Drilling of a Kaolin Deposit, Ravensbourne Area. G. L. Rolfe. May, pp. 156-164.

(ix) Stratigraphic Drilling Report—GSQ Jericho 1. C. F. J. Swarbrick. June, pp. 210-215.

(x) Note on the Optimum Sample Weight for the Determination by Atomic Absorption Spectrophotometry of Certain Metals in Drainage Sediments. L. N. Wall and J. S. Lam. June, pp. 216-217.

(xi) The Influence of Basement Type on Coal Metamorphism on the Collinsville Shelf. W. H. Koppe and J. C. Anderson. July, pp. 245-248.

(xii) Palynology and Age of the Callide Coal Measures. N. J. de Jersey. July, pp. 249-255.

(xiii) Departmental Coal Drilling, Consuelo Programme, Southwest Bowen Basin. J. C. Anderson. August, pp. 273-275.

(xiv) Queensland Reserves of Black Coal, August 1974. August, p. 277.

(xv) The Exmoor Formation—An Addition to Stratigraphic Nomenclature in the Northwestern Bowen Basin. W. H. Koppe. August, pp. 280-285.

(xvi) Stratigraphic Drilling Report—GSQ Tambo 2. C. I. Wallin. August, pp. 287-292.

(xvii) Petrographic Studies and Evaluation of a Coal Seam in the Broadmeadow Area. J. W. Beeston. September, pp. 316-319.

(xviii) New and Revised Stratigraphic Names in the Ipswich 1:250 000 Sheet Area. L. C. Cranfield and H. Schwarzbock. September, pp. 322-324.

(xix) Cavities in Alluvium at Inglewood. K. R. Warner. October, pp. 358-359.

(xx) Environmental Geology—Concept and Application. G. W. Hofmann. November, pp. 384-390.

(xxi) Departmental Drilling Programme—Flinders Dolomite Deposit, Ipswich District. G. L. Rolfe. November, pp. 393-411.

(xxii) Fossil Fuel Reserves in Queensland. What of the Future? J. T. Woods and W. L. Hawthorne. December, pp. 420-424.

(xxviii) Petrographic Studies and Evaluation of the Goonyella Middle Seam in Grosvenor NS14. J. W. Beeston. December, pp. 427-429.

(d) *Other Publications*:—

(i) Stratigraphy and Structural Setting of Mesozoic Basins in South-eastern Queensland and North-eastern New South Wales. R. W. Day, L. C. Cranfield, H. Schwarzbock. In *The Tasman Geosyncline—A Symposium*. Geol. Soc. Aust. Qd Div., pp. 319-363.

(ii) Progress Report on the Geology of the Carpentaria Basin in Cape York Peninsula. H. J. Doutch (BMR), J. Smart (BMR), K. G. Grimes (GSQ), D. L. Gibson (BMR), and B. S. Powell (BMR). Rec. Bur. Miner. Resour. Geol. Geophys. Aust., 1973/187.

(iii) Structural Evolution and Geotectonic Nature of the Middle Proterozoic Mount Isa Fault Trough, North-western Queensland. A. Y. Glikson (BMR), G. M. Derrick (BMR), I. H. Wilson (GSQ), R. M. Hill (BMR). Rec. Bur. Miner. Resour. Geol. Geophys. Aust., 1974/14.

(iv) Geology of the Mary Kathleen 1:100 000 Sheet Area, Queensland, G. M. Derrick (BMR), I. H. Wilson (GSQ), A. Y. Glikson (BMR), R. M. Hill (BMR), and J. E. Mitchell (BMR). Rec. Bur. Miner. Resour. Geol. Geophys. Aust., 1974/90.

(v) Mesozoic and Cainozoic Geology of the Lawn Hill, Westmoreland, Mornington, and Cape Van Dieman 1:250 000 Sheet Areas, Queensland. K. G. Grimes (GSQ). Rec. Bur. Miner. Resour. Geol. Geophys. Aust., 1974/106.

(vi) A Holocene Molluscan Fauna from Maroochydore, Queensland. P. A. Wood (GSQ) and Helen King. Mem. Qd Mus., 17, pp. 69-71.

(vii) Brisbane 1:250 000 Geological Series, Sheet SG 56-15, 1st Edition. L. C. Cranfield and H. Schwarzbock.

(viii) Mundubbera 1:250 000 Geological Series, Sheet 56-5, 1st Edition. W. G. Whitaker, P. R. Murphy, R. G. Rollason.

(ix) Bundaberg 1:250 000 Geological Series, Sheet SG 56-2, 1st Edition. P. L. Ellis.

(x) Prospector 1:100 000 Geological Series, Sheet 6857. I. H. Wilson (GSQ), R. M. Hill (BMR), G. M. Derrick (BMR), B. A. Duff (BMR), D. J. Ellis (BMR), and T. A. Noon (GSQ).

2. The following papers were in press or were completed for publication by the end of the year:—

(i) Isotopic Measurements in the Cape York Peninsula Area, North Queensland. J. A. Cooper, A. W. Webb, and W. G. Whitaker (GSQ). J. Geol. Soc. Aust.

(ii) New and Revised Stratigraphic Nomenclature, Cape York Peninsula. B. S. Powell (BMR), D. L. Gibson (BMR), K. G. Grimes (GSQ), and J. Smart (BMR). Qd Govt Min. J.

(iii) Port Clinton 1:250 000 Geological Series, Sheet SF 56-9. 1st Edition with Explanatory Notes. C. G. Murray.

(iv) Rockhampton 1:250 000 Geological Series, Sheet SF 56-13. 1st Edition with Explanatory Notes. C. G. Murray.

(v) Gympie 1:250 000 Geological Series, Sheet SG 56-10. 1st Edition. P. R. Murphy, H. Schwarzbock, L. C. Cranfield, and R. G. Rollason.

(vi) North Stradbroke Island—Hydrogeological Report. J. W. Laycock. Rep. Geol. Surv. Qd, 88.

(vii) Coal Exploration, South Central Bowen Basin, Departmental Area 56D. H. R. E. Staines. Rep. Geol. Surv. Qd, 89.

(viii) Planktonic Foraminiferida from the Capricorn Basin, Queensland. V. Palmieri. Publs Geol. Surv. Qd, 362, Palaeont. Pap., 36.

3. The following Records of the Geological Survey were prepared for limited distribution:—

1974/1 Upper Condamine River Damsites—Pratten Site. Preliminary Geological Report. P. Quarantotto.

1974/2 Burpengary–Narangba Water Supply—Geological Report on Caboolture Weir Sites. W. F. Willmott.

1974/3 Anakie Seismic Survey—1973. D. E. Searle.

1974/4 Some Aspects of Queensland Coal Geology and Geophysics. J. C. Anderson.

1974/5 Gold Coast Water Supply Augmentation. Geological Report on Slope Stability at Intake Site, Little Nerang Creek. R. M. Barker.

1974/6 Coal Exploration, South Central Bowen Basin —Emerald Area, Stage II Drilling. W. J. Park.

1974/7 Clermont Water Supply. Review of Groundwater Potential, Alluvium of Sandy Creek. B. J. Abtmaier.

1974/8 North Pine Dam Catchment Land Use Study. Reconnaissance of Geological Aspects. G. W. Hofmann.

1974/9 Schulz Canal Seismic Refraction Survey. R. D. Huber.

1974/10 Coal Exploration, South Central Bowen Basin —Emerald Area, Stage III Drilling. W. J. Park and A. G. Galligan.

1974/11 Rolleston Water Supply. Geological Report Proposed Earth Tank Sites. P. J. Muller.

1974/12 Galilee Basin. Exploratory Coal Drilling—Laglan area. A. F. Carr.

1974/13 Departmental Drilling, Consuelo Programme, Southwest Bowen Basin. J. C. Anderson.

1974/14 The Place of Micropalaeontology in Industrial and Environmental Research. V. Palmieri.

1974/15 Gunpowder Creek Damsite. Geological Information for Tenderers, 109·0 km Damsite. R. M. Barker and G. W. Hofman.

1974/16 Gladstone Water Supply. Mineral Resources of Reservoir Area, Proposed Boyne River Buttress Dam. N. J. Krosch.

1974/17 Gladstone Water Supply. Geological Report on Proposed Buttress Dam on Boyne River. W. F. Willmott.

1974/18 Preliminary Geological Report on the Anakie Mining Field. A. D. Robertson.

1974/19 Wivenhoe Pumped Storage Hydroelectric Scheme. Preliminary Geological Report. K. R. Warner.

1974/20 Summary of Mineral Exploration in the Georgetown Region to 1973. I. W. Withnall.

1974/21 Summary of Mineral Exploration Surveys in the Cloncurry 1:250 000 Sheet Area. T. A. Noon.

1974/22 Blair Athol Railway. Geological Reconnaissance. D. R. Leitch.

1974/23 Coolangatta Landslip Investigation. J. K. Findlay.

1974/24 Wolston Park Special Hospital Water Supply. Z. Zahawi.

1974/25 Roslyn Bay Boat Harbour. Engineering Geology and Scenic Features of Double Head. J. K. Findlay.

1974/26 Pioneer River Area Groundwater Investigation. Seismic Refraction Survey. D. E. Searle.

1974/27 Blair Athol Railway—Preliminary Terrain Evaluation. D. R. Leitch.

1974/28 Galilee Basin Exploratory Coal Drilling—Moray Downs Area. A. F. Carr. Appendix by J. W. Beeston.

1974/29 North Bowen Basin Railway Spurs—Preliminary Terrain Evaluation. J. K. Findlay.

1974/30 Rocksberg Pumped Storage Scheme—Geological Reconnaissance. D. R. Leitch.

1974/31 Galilee Basin Exploratory Coal Drilling. Lambton Meadows Area. A. F. Carr. Appendix by J. W. Beeston.

1974/32 North-South Freeway—Geophysical Survey. D. E. Searle.

1974/33 Prosperpine River. 58·3 km Damsite. Seismic Refraction Survey. D. E. Searle.

1974/34 Amity and Point Lookout Groundwater Geophysical Survey. R. D. Huber.

1974/35 Departmental Drilling—Northern Bowen Basin–Annandale Area. W. H. Koppe.

1974/36 Departmental Drilling—Calen Coal Measures. W. H. Koppe.

1974/37 Departmental Drilling, Springsure Shelf Programme, Western Bowen Basin. J. C. Anderson.

1974/38 Departmental Drilling, North Central Bowen Basin—Roper Creek East Area. J. C. Anderson.

1974/39 Condamine Valley Groundwater Investigations. Hydrogeological Investigation of the Area between Oakey and Leyburn. J. E. Howe.

1974/40 Amity Point Water Supply—Hydrogeological Report. J. W. Laycock.

4. Members of the staff contributed further papers in their respective fields to "Economic Geology of Australia and Papua-New Guinea" to be published by the Australasian Institute of Mining and Metallurgy in four volumes.

DISTRICT OFFICE, CHARTERS TOWERS

K. R. Levingston, District Geologist

S. Ishaq

The employment of two geologists at this office for the full year gave greater scope for activity, particularly in regard to field work. Unfortunately many areas were inaccessible for a long period following the exceptional wet season in the early part of the year.

FIELD WORK

Antimony.—In an attempt to establish the nature of antimony mineralization at Ravenswood, an inspection was made of the abandoned *Mount Wellington* mine, formerly the main producer. It was confirmed that the ore-bodies are small, and that treatment would be necessary to produce a high-grade concentrate. The area is thus not encouraging.

A visit was paid to the *St. George* and nearby antimony mines on the Mitchell River. Since the previous visit (1967) the prospector's show had been taken over by an exploration company, who had attempted exploitation of the small vein by an open-cut of ambitious dimensions. The venture had failed, for obvious reasons, and the mine was abandoned.

Copper.—A visit was made to the abandoned *Mount Molloy* copper mine, where Mareeba Mining and Exploration Pty Ltd have done a considerable amount of exploration. Their work suggested that this old mine still had some potential as a producer of both copper and zinc, but much more needs still to be done before any definite conclusions could be reached.

At the *U.N.A.* mine at Watsonville, an incline was sunk to permit access to an irregular copper ore body. This mine had achieved some production, but difficulty was being experienced in reducing the arsenic content in the concentrate to an acceptable limit.

Two other prospects were examined, but these were still very much in the exploration stage. Drilling was proceeding at the old *Mount Garnet* copper mine, and at the *Warrawee* copper-silver-lead-zinc prospect near Charters Towers.

Tin.—A number of inspections were made in the Herberton tin-mining area. Two company operations were visited—Loloma Mining Corporation N.L. at Irvinebank, and Gold Copper Exploration Ltd at Sunnymount. Both have their own geological staff, so no geological work was required of this office. However, in discussion with both companies the opportunity was taken to stress the desirability of publishing some of their geological work, and it is hoped that this will be done.

Among the smaller tin shows visited in the area were the *Comet, Elisabeth, Jean Agnes, Lady Agnes, Lynette Marie, Morning Cloud, Mount Tin, Peacemaker, Rip and Tear,* and *Sandra Mary.* These ranged from fair producers to practically untouched prospects. Work done ranged from fairly lengthy surveys of complicated workings to shorter inspections mainly involving discussions with prospectors.

Wolfram.—An inspection was made at Mount Carbine, where RB Mining Pty Ltd has been engaged for some years. This company has concluded a successful operation of bulk-treating the "floater ground", and is now turning to the veins of Carbine Hill itself. It is hoped that a successful open-cut venture can be carried out.

Fluorspar.—Comalco Ltd. has been exploring for some time at Mount Garnet and a visit was paid to operations. Fluorspar has been found in certain skarns, and magnetometer surveys, followed by percussion drilling, have proved very satisfactory for exploration. Work is still proceeding.

Limestone.—A major project was begun, which is intended to ultimately include all limestone resources in North Queensland. The Chillagoe area is the first to be studied, because from its situation and the nature of the deposits there, it is presently receiving attention from the points of view of both exploitation and conservation. While it has generally been accepted in the past that the area contains large quantities of good quality limestone, no attempt has ever been made to accurately define reserves or quality. Work done so far has confirmed that much of the limestone is very high grade, even when of most unimpressive appearance. Reserve estimates present difficulty because of the roughness of the topography, and the many caves present a potential difficulty to quarrying. This investigation is still proceeding.

Marble.—The Marble Towers deposit north of Clarke River was surveyed, and samples taken for polishing tests. This work was not complete at the end of the year.

Sand, clay and gravel.—In view of the difficulties facing the extractive industries in some of the larger cities, it was felt that the position in Townsville should be investigated. A short survey indicated that sources of gravel and crushed rock were adequate, and well situated as regards zoning; clay requirements were small, and supplies were adequate; sand was becoming difficult to obtain in the required quantities, and could represent a very real problem in the future.

OFFICE WORK

A considerable amount of work arose from field investigations. In particular, much time was spent in preparing suitable maps, with form lines, of the Chillagoe area for the limestone investigation.

Enquiries from mining company representatives continued, though at a somewhat reduced rate. The Townsville hinterland is still one of the main areas of interest to companies, and much of it is held under Authority to Prospect. Interest is still mainly in base metals, although most companies are now willing to give more attention to gold deposits than previously.

Prospectors samples and enquiries were dealt with, also at a somewhat reduced rate. There is still virtually no interest in gold among prospectors, and it is beginning to be doubtful whether there will be any, at least in the near future.

COAL

D. C. Mengel, Principal Geologist

H. R. E. Staines, A. Davis (to January), A. F. Carr, Senior Geologists

J. C. Anderson, V. Prouza (to January), W. H. Koppe, J. W. Beeston, W. J. Park (to March), A. G. Galligan (from July)

The main activities of the Coal Section were associated with Departmental exploration in the Bowen and Galilee Basins. Ten drilling rigs were used in programmes with no more than six operating at any one time. Many enquiries from mining companies were received about the results of this work and about Queensland coal geology. The Coal Petrology Laboratory provided a very useful ancillary service to exploration and continued petrologic study of various Queensland coals.

Estimates of black coal reserves were updated and published in the *Queensland Government Mining Journal.*

DEPARTMENTAL EXPLORATION

Ninety-one boreholes, including ten re-drills, were completed during the year and a further four holes were in progress. Total drilling amounted to 18 713·16 m of which 13 480·15 m was cored. This represents a reduction from 1973 (99 boreholes, 21 937·40 m total, 16 561·98 m cored) which was caused mainly by the abnormal and prolonged wet season. The emphasis in exploration, in the second half of the year, was changed from coal prospecting and stratigraphic drilling to the upgrading of coal reserves to indicated status. These reserves had been inferred by previous Departmental exploration. Some programmes were postponed during the year to concentrate as many rigs as possible in the one area in order to expedite upgrading of reserves and to provide economy of drilling operations.

North Central Bowen Basin

Moranbah.—Following the encouraging results of a hole drilled near Moranbah township in 1973, a further 11 holes, including three re-drills, were drilled in the area during 1974. Aggregate drilling for the year was 2 658·93 m. The prospective area in which the holes were drilled is a N to NW trending belt of 100 km^2 between S.C.M.L. 127 (Goonyella) and S.C.M.L. 246 (Peak Downs). Moranbah township lies near the centre of the area. Large reserves of underground coking coal have been inferred in four major coal seams which are contained in the Fair Hill Formation (to be redefined, in this part of the basin, as the Moranbah Coal Measures). A second programme is planned to raise these reserves to indicated category.

Roper Creek East.—The northern half of this area was shown by drilling to contain severe structural complications and further exploration was confined to the southern part. Twenty-four boreholes were completed during the year for an aggregate of 2 602·09 m, of which 1 187·44 m was cored. Approximately half of this programme was carried out using air drilling equipment and consisted of shallow holes along prepared lines close to the sub-crop of coal. Drilling to upgrade reserve status is continuing.

Picardy.—Three boreholes, total 1 110·25 m (1 025·17 m cored) were completed in this area. The thick Middlemount seam in the Rangal Coal Measures was traced from Warwick Park to Leichhardt Downs in the north, but complications due to faulting and igneous intrusions are indicated. The programme was suspended and will be continued later.

Parrot Creek.—In this area, which was previously part of Authority to Prospect 67C held by Utah Development Company, company drilling had shown the existence of three seams of economic interest—Aquila, Tieri, and German Creek seams. These seams are continuous with seams in the adjoining Oaky Creek area to the south. An initial Departmental drilling programme, with 3·2 km grid spacing, was expanded and the grid reduced to 2 km in an attempt ot raise the large reserves of coking coal inferred in these seams to indicated category. Up to four drilling rigs were used in this area and twelve holes, including two redrills, were completed and a further three holes, including one redrill, were in progress. Aggregate was 3 765·21 m of which 2 756·10 m was cored. Results have been encouraging and drilling is continuing.

South Central Bowen Basin

Emerald.—The programme in this area was completed by drilling 13 holes totalling 2 403·64 m, of which 1 888·65 m was cored. Indicated reserves of coking coal in the German Creek seam amount to 580 million tonnes and indicated reserves of non-coking coal in the Aries seam are 510 million tonnes. Small reserves of non-coking coal are inferred in the German Creek and Corvus seams. Because of the thick Tertiary cover and relative thinness of the seams all coal will be extractable only by underground mining.

Oaky Creek.—Eighteen boreholes including one re-drill, and aggregating 3 249·57 m (2 573·73 m cored), were completed in this area to test the German Creek seam. Drilling disclosed deterioration of the seam in the southern part of the area. The programme was suspended in favour of drilling in the Parrot Creek area, but will be continued in 1975 to upgrade the status of the large reserves of coking coal inferred in the northern part of the area.

Togara.—Drilling was seriously curtailed by rain during the early part of the year and did not commence until May. Five holes, including one re-drill, were completed in the northern part of the area, and drilling ceased in October. Total amount drilled was 1 292·26 m, of which 790·28 m was cored. As a result reserves inferred in the low ash, non-coking Pollux seam have been extended. Drilling in the area will be continued probably in late 1975.

Galilee Basin

Coal exploration in the Galilee Basin was delayed by wet weather, and drilling did not begin until March. Seven holes were completed, four in the View Hill area and three at Longton, and an eighth hole is in progress at the latter. Total drilled was 1 631·21 m, of which 1 073·85 m was cored.

At View Hill, which is located midway between the Moray Downs and Mirtna areas, seams A to F can be recognized. Seam A–B is particularly well developed with at least 6 m thickness of workable quality coal. Seam D is 4 to 5 m thick, and would probably not require beneficiation. The lower seams, although containing only a small percentage of bright coal, are relatively clean. Dip of the coal measures is very gentle, but as with other areas drilled in the Galilee Basin, there appears to be no coal cropping out. Thickness of superficial Tertiary deposits is up to 75 m.

Results of the Longton drilling are not encouraging so far. Three thin coal seams have been intersected in what appears to be the lower part of the Late Permian.

COAL PETROLOGY LABORATORY

Detailed iso-reflectance and depth reflectance studies and petrographic analyses were carried out on coal samples from Departmental drilling programmes in the Bowen and Galilee Basins. A depth reflectance study was also made of coal from a petroleum well in the Cooper Basin. The preparation of iso-reflectance maps of the various stratigraphic units in the Bowen Basin was continued. Tonsteins associated with coal seams were also studied.

CORE LIBRARY

The facilities offered by the Core Library were used frequently by Departmental officers during 1974. However, the reduction in the number of visitors from private companies from 149 in 1973 to 45 in 1974 reflects the present lack of interest in exploration by sections of the mining industry. Lack of storage space is the major problem in the efficient operation of the library. Construction of the planned new library is required urgently.

COMPUTING

I. G. Moore (since February)

An investigation of the requirements of the Geological Survey with regard to computer usage was commenced in February. Most aspects of the activities of all sections have been examined and a computer systems developmental programme incorporating data management and information systems, computer graphics, scientific programming and numerical analysis has been charted. A critical path time and resource analysis has been carried out employing the computer system PERT (Programme Evaluation and Review Technique). A computer needs survey report is being finalized incorporating project management and data base management proposals.

A detailed literature survey has been conducted of all currently documented systems in the earth sciences and a collection of scientific programmes has been obtained from other geological surveys and institutions as well as from companies.

Provision was made in 1974–75 funding for the purchase of peripheral equipment including a remote terminal with keyboard "send and receive" facilities and cassette tape storage, and a graphics terminal permitting text and map displays. Currently, use is being made of a remote terminal facility available elsewhere in the Department which is connected to the University of Queensland's PDP–10 Computer.

The facilities of the ICL 1904 and the 1904A installations at the Treasury Department EDP Branch and the ICL 1905 computer at the Main Roads Department are also available.

ECONOMIC GEOLOGY

J. H. Brooks, Principal Geologist

J. D. Sawers, Senior Geologist

A. D. Robertson, J. E. Martin, J. E. Siemon, N. J. Kros ch, J. R. Kay, M. L. O'Flynn, W. Cooper, D. J. Horton

Emphasis continued to be on the appraisal of limestone resources in eastern Queensland and extractive material surveys in the Moreton Region. On the metalliferous side, drilling programmes were carried out on two low grade disseminated copper deposits, and a detailed literature study of bulk low grade copper–molybdenum deposits was made. Three geologists were employed essentially on extractive materials, two on limestone, and three on metalliferous projects.

LIMESTONE

Barambah Creek.—Drilling was carried out to define the extent of deposits partly concealed by overburden and attempt to classify stratigraphic relationships. Two of the deposits were found to be much larger than indicated by surface exposure. The larger of the two deposits is below the proposed dam on Barker Creek but the other lies within the ponded area. Reserves are adequate for any foreseeable requirement of chemical grade limestone for the Brisbane market.

Tamaree–Curra.—Moderate reserves were defined at Tamaree but the grade is somewhat inferior. At Curra, where quarrying is in progress, open cut reserves are rather limited.

Gigoomgan.—Extensive deposits of limestone are present in this area between Calgoa and Biggenden but much of it has a high silica content. The limestone is extensively affected by granitic intrusion, and wollastonite is commonly present in significant amount. Some parts of the deposits may be suitable for cement manufacture.

Rockhampton–Gladstone.—Due to other commitments only limited progress was achieved on this project. Field work has brought to notice many additional deposits which require mapping and sampling. A report on diamond drilling of the Lion Creek Limestone, Dalma area was prepared. The importance of limestone resources with respect to possible future requirements for steel making, alumina production, and cement manufacture necessitates a detailed assessment.

EXTRACTIVE MATERIALS

Work was continued in several shires in the Moreton Region. The report on the Albert Shire and City of Gold Coast was revised and edited; field work and drilling in the Redlands Shire, Pine Rivers Shire, and City of Redcliffe were completed; drilling in the Beaudesert Shire was completed; and auger drilling in the Caboolture Shire was well advanced at the end of the year. Additional work remains to be done in Moreton Shire. Close liaison has been sought with industry and the shire councils to ensure that the work carried out provides the type of information required and that interested parties are aware of the large volume of data becoming progressively available.

A total of 1 059 non-core and 30 core holes were completed. This is less than the 1973 totals but the decline may be accounted for by the exceptionally wet weather conditions. Some testing of gravel deposits was carried out using a truck-mounted Calweld bucket type drill. However, "teething" problems have restricted drilling to experimental holes.

In *Beaudesert Shire* deposits of sand in the Scrubby Creek, Oxley Creek, Logan River, and Allen Creek areas were sampled by triple tube drilling. Small deposits of clay suitable for the manufacture of bricks were delineated in the Browns Plains–Kingston area. In *Redlands Shire* drilling has indicated that resources of extractive materials are relatively small. A diamond drilling programme tested shales which may have potential for brick-making, and quartzite and conglomerate for sources of road base material. The auger drilling programme in the *Caboolture Shire* has indicated several substantial deposits of sand, good quality clay, and shale. These could become of considerable importance as available sources of these materials closer to Brisbane are depleted.

A compilation of information on the present and future availability of extractive materials in the City of Brisbane and environs was completed and a report submitted in August. The report was accompanied by preliminary resource maps of the Brisbane, Beenleigh, Caboolture, and Ipswich 1:100 000 Sheet areas. A similar study is in progress on the Gold Coast and environs.

DRILLING TABLE—ECONOMIC GEOLOGY, 1974

Mine or Locality	Metal or Material	No. of Holes	Type of Drilling	Total Metres
Curra–Tamaree (Gympie)	Limestone	2	Core	87
		72	Hammer	402
Barambah (Murgon)	Limestone	7	Core	355
		117	Hammer	886
Gigoomgan (Biggenden)	Limestone	7	Core	664
		17	Hammer	62
Mount Clara–Block 13 (Kilkivan)	Copper ..	6	Core	1 220
Whitewash (Monto) ..	Copper-molybdenum	3	Core	311
Phoenix Reborn (Gympie)	Gold ..	1	Core	120
Beaudesert Shire ..	Clay, sand	41	Auger	266
	Sand ..	53	Triple tube	299
	Shale, clay	64	Wing bit	450
Redlands Shire ..	Clay, sand	177	Auger	981
	Shale, etc.	30	Core	646
Caboolture Shire ..	Clay, sand	715	Auger	4 132
Pine Rivers Shire ..	Gravel ..	4	Bucket	45
Moreton Shire ..	Gravel ..	5	Bucket	20

METALLIFEROUS PROSPECTS

Whitewash (Monto).—Drilling was carried out at the request of the lessees following relinquishment of an option to purchase by a major company which had previously completed geological, geochemical, and geophysical surveys. Soil and rock geochemistry indicated large copper-molybdenum anomalies associated with the Wingfield Adamellite. The most significant part of the main geochemical anomaly is situated beyond the boundaries of the leases held by the applicants but a programme of three 100 m holes was drilled to give an indication of the grade at depth. The persistence of pyrite-chalcopyrite–molybdenite mineralization was demonstrated but the grade is well below current economic levels.

Block 13 (Kilkivan).—Three diamond drill holes were completed on this prospect and a fourth was in progress at the end of the year. Pyrite, chalcopyrite, and sphalerite are associated with numerous small quartz veins in an altered basic volcanic-serpentinite succession. Indications are that the bulk grade is very low.

Grieve's Quarry (Silverwood).—Geological mapping, supported by geophysics, was carried out in Departmental Reserve 43D as a follow up to earlier investigations of base metal mineralization at Grieve's Quarry. Some magnetic anomalies were obtained along strike from Grieve's Quarry and these will be further investigated by I. P. geophysics.

Bulk low grade copper-molybdenum deposits.—A synthesis was made of the large volume of data which have accumulated as a result of mining company exploration in the 1960's and early 1970's. Some 46 prospects of this type are associated with Cretaceous, Permo-Triassic, Early Permian, Carboniferous and Siluro–Devonian granodiorite-adamellite intrusions. Some significant relationships are apparent between the distribution of prospects and major lineaments and follow up work is planned on prospective areas indicated by the study.

GEMSTONES

Some 42 opal mining operations were inspected in the Yowah, Toompine, Eromanga, Kyabra, and Bulgroo areas in south-western Queensland. Earth moving equipment has been used to advantage in several areas to rapidly expose the opal-bearing ferruginous band. The scale of mining activity in the last few years has been greater than at any time since the early 1900's but little idea can be gained of the total value of production.

OTHER INVESTIGATIONS

Minor inspections were made of copper prospects at Brooyar and Gigoomgan; gold at the Queenslander (Warwick), the Phoenix Reborn (Gympie) and the Red Queen (Taromeo); earthy lime at Waroon; and foundry sand on North Stradbroke Island.

Mineral resources studies were made in connection with environmental impact reports on the Boyne River dam, the Three Moon Creek dam, and the extension of the Burdekin Irrigation Scheme.

Several mining companies closed down their Queensland exploration operations in the 1973–74 period and large amounts of drill core were offered to the Department for preservation. A considerable amount of time was spent examining cores and selecting representative sections for addition to the Core Library.

The wide divergence in the manner of presentation of reports submitted to the Department under the terms of Authorities to Prospect led to a proposal for a set of guidelines. It is hoped that this will benefit companies exploring areas previously held under Authority to Prospect and facilitate the addition of information to indexing systems.

ENGINEERING GEOLOGY AND HYDROGEOLOGY

K. W. Wolff, Principal Geologist

J. W. Laycock, K. R. Warner, M. A. Randal, Senior Geologists

J. K. Findlay, P. Quarantotto, W. F. Willmott (to December), Z. S. Zahawi, R. M. Barker, D. R. Leitch, P. J. Muller, and B. F. Abtmaier (to February)

Geological investigations for civil engineering projects were again undertaken for State Government and semi-governmental authorities. In addition, a programme of hydro-geological investigations drawn up in co-operation with the Irrigation and Water Supply Commission, and financed from the Water Resources Investigation Trust Fund which attracts subsidy from the Commonwealth Government, was carried out. Expenditure on these groundwater projects totalled $100,000 in 1973–74, and $106,000 has been provided for these investigations during 1974–75.

ENGINEERING GEOLOGY INVESTIGATIONS

Copperlode Falls Damsite.—Inspections were carried out as construction proceeded and logs of excavations were prepared. At the end of the year construction of the embankment and excavation of the spillway were near completion. Grout takes at the dam have been exceptionally high, especially in the upper abutments owing to open joints and fractures. Additions and modifications to the scheduled grouting proposals have had to be made.

Gold Coast Water Supply.—Construction of the Advancetown Dam commenced. Detailed geological mapping of excavations was undertaken. At the end of the year excavations in the right abutment, river bed, and conduit areas were near completion. Auger drilling totalling 395 m was carried out over proposed borrow areas for earth core material to assess in detail variations in soil properties. A seismic refraction survey and 158 m of core and auger drilling were undertaken on the permanent works road and the river crossing downstream of the damsite. An alternative quarry site was investigated by 56 m of core drilling and detailed geological mapping. In addition 18 m of auger drilling and seismic refraction surveys were undertaken over the pipeline route from the intake site on Little Nerang Creek to the treatment works at Mudgeeraba. An inspection was made of sinkholes and an unstable slope near the permanent works road at the damsite, and further investigations are proposed.

Mackay Water Supply.—A concrete weir on the Pioneer River at Dumbleton Rocks is proposed to augment the water supply to Mackay. Geological mapping and core drilling totalling 196 m were completed during the year. At the site, the rocks consist of tuff of the Palaeozoic Carmila Beds intruded by andesite.

Upper Condamine River Damsites.—Reports on damsites on the Condamine River at Pratten and Talgai were completed during the year.

Coen Water Supply.—A geological reconnaissance was made of damsites on Llankelly Creek. At the upper site on Llankelly Reef, dozer cuts indicated considerable weathering. An alternative site 60 m downstream in adamellite with shallow alluvium should prove suitable for the proposed small dam.

Gladstone Water Supply.—Geological investigations including detailed drilling for a buttress dam on the Boyne River near Gladstone were completed in 1973. A report has now been finalised.

Burpengary–Narangba Water Supply.—A report on geological investigations, including drilling undertaken in 1973 at two possible weirsites on the Caboolture River, was finalised.

Kolan–Burnett Rivers Irrigation Scheme.—Preparation of reports on earlier investigations at tidal barrage sites on the Kolan River and Burnett River was commenced.

Denison Creek Damsite.—Engineering geological information was provided for an environmental impact statement on the Denison Creek Damsite, which was investigated in 1971–72.

Gunpowder Creek Damsite.—A geological report for tenderers, based on results of investigations completed in 1973, was issued.

Rolleston Water Supply.—Geological investigation of an earth tank site on alluvium at Rolleston were finalised with the completion of laboratory testing of soil samples.

Wolston Park Special Hospital Water Supply.—A geotechnical investigation was carried out for a new water supply pipeline crossing of Woogaroo Creek in the Goodna area. Investigations included auger drilling and seismic refraction traverses.

Wivenhoe Pumped Storage Hydroelectric Scheme.—Core drilling and trenching for this project was completed in 1973. The remaining field work, consisting of core logging and trench mapping, continued in the early part of the year. Although certain aspects of the geology of the site are very favourable to the scheme, further investigations will be required, particularly in the proposed power station area where the relationship of rocks has not been determined conclusively.

Rocksberg Pumped Storage.—A geological reconnaissance of an area near Rocksberg for a proposed pumped storage hydro-electric scheme continued. Three possible damsites on the Caboolture River were considered for the location of a lower pond, and a site on Waterfall Creek was investigated for an upper pond. Underground excavations for tunnels and a powerstation would mainly be in greenstone with some phyllitic bands.

Central Queensland Powerstation Sites.—Geological reconnaissances were undertaken for possible powerstation extensions at Callide and for a possible powerstation site at Blackwater. The work involved geological mapping and seismic refraction surveys. At the Callide site dolerite of the Devonian Kroombit Beds and conglomerate of the Permian Rainbow Creek Beds occur. At Blackwater basal sandstones and mudstones of the Rangal Coal Measures underlie the powerstation sites.

Blair Athol Railway.—A geological reconnaissance and terrain evaluation study of two alternative routes for a proposed railway from Blair Athol to the Goonyella–Hay Point Railway line were undertaken. The work involved geological mapping, seismic refraction surveys, and materials testing.

North Bowen Basin Railway Spurs.—Three proposed railway spur lines totalling 36 km, for proposed coal mining projects in the North Bowen Basin, were investigated. Preliminary terrain evaluation studies were made.

Rosslyn Bay Boat Harbour.—A report on the engineering geology of Double Head south of Yeppoon was completed. It covered investigations completed in 1972 to ascertain the stability of the rock face overhanging the breakwater and jetty access road.

Coolangatta Landslip.—A landslip with an earthflow in the Coolangatta area was inspected. The earthflow was derived from a hilltop remnant of weathered Tertiary basalt.

Little Nerang Dam Landslide.—Inclinometer and piezometer installations were read on a regular basis. Isolated movements noted on the installations and surface observations suggest "piecemeal" movements rather than a massive slide.

Miscellaneous.—A number of Brisbane homesites which had suffered landslide damage following the January flood rains were inspected. In some cases relocation to a new site was recommended and these required verification as to safety from landslide problems.

Landslides affecting sewerage installations at Ipswich and proposed land subdivisions at Toowoomba were inspected.

A geological reconnaissance of a potential quarry site in basalt in the Lowood area was carried out.

Extractive Materials Survey.—As part of a survey of extractive materials available in the City of Brisbane and its environs an officer was assigned to a preliminary assessment of quarry rock materials and their availability. This work was complementary to a survey of sand gravel and clay resources undertaken by an officer of the Economic Geology Section. Later, extension of the survey to the Gold Coast and Sunshine Coast areas was commenced.

HYDROGEOLOGICAL INVESTIGATIONS

Mulgrave River Groundwater.—Work continued with the drilling of exploratory bores totalling 1 228 m. Pumping tests were carried out on three production bores. Although areas of potentially useful aquifers have been located, wide variations in the alluvial sequence commonly occur over short distances. Most bores have been equipped for observation purposes. Laboratory testing of samples has been completed. Further drilling of production bores is proposed. Compilation of data is proceeding.

Noosa-Pine Rivers Groundwater.—Drilling continued and 22 holes totalling 792 m were completed in the Dayboro, Caboolture, Woodford, Peachester, and Maleny districts to ascertain groundwater potential. Further drilling is proposed.

Logan–Nerang Rivers Groundwater.—Investigations continued with a programme of drilling and geophysical surveys. Drilling totalling 122 m and six seismic refraction traverses were completed.

Mary Valley Groundwater.—Following a regional hydrogeological survey of the Mary Valley in 1969, a recommendation was made for further testing of the alluvium east of Maryborough. During the year nine exploratory and production bores totalling 260 m were drilled and tested. The prospects of obtaining large supplies of good quality groundwater in the area appear low.

Condamine Valley Groundwater.—A report on earlier hydrogeological investigations undertaken in the Condamine valley covering the area from Leyburn to Oakey was completed. Irrigation supplies are obtained mainly from fluviatile sections of the Cainozoic alluvium and significant stock supplies from Tertiary basalt.

Barron River Groundwater.—Hydrogeological mapping and the collection of bore data have been completed in the area which includes the lower Barron River together with Freshwater Creek and the associated coastal plain. Drillsites have been selected.

Lockyer Valley Groundwater.—A report on previous investigations was prepared and at the end of the year was being edited.

Theresa Creek–Upper Mackenzie River Groundwater.—Hydrogeological mapping and bore data collection were commenced over four 1:100 000 map Sheet areas north of Emerald.

North Stradbroke Island Water Resources.—Periodic water level measurements were made in 40 bores. Model studies directed to determining the position of the saltwater-freshwater interface under assumed parameters of aquifer thickness, lateral flow, and hydraulic conductivity were commenced.

Cloncurry 1:1 000 000 *Regional Groundwater.*—Processing of bore data and chemical analyses for the Julia Creek and Cloncurry 1:250 000 Sheet areas was completed. Chemical analyses of samples taken in the Mount Whelan, Springvale, Boulia, and Brighton Downs 1:250 000 Sheet areas were collated.

Charleville 1:1 000 000 *Regional Groundwater.*—Hydrogeological mapping and bore data and water sample collection were undertaken over the Roma and Surat 1:250 000 Sheet areas. Bore data for the Blackall, Tambo, Adavale, Augathella, Roma, Surat, Mitchell, and Homeboin 1:250 000 Sheets were collated.

Georgina Basin Groundwater.—Editing of the report on earlier field investigations was continued. Drafting of the accompanying 1:500 000 scale map and figures is now largely complete.

Amity Point Water Supply.—Investigations included 389 m of drilling and seismic refraction and resistivity surveys to define the best potential area for a town water supply.

Point Lookout Water Supply.—Investigations directed to augmentation of the town supply from groundwater resources were carried out. These included drilling of exploratory bores, totalling 312 m, and seismic refraction and resistivity surveys.

Pine Rivers Shire Hydrogeological Survey.—A hydrogeological survey to assess groundwater resources and conditions in the Pine Rivers Shire was commenced. The results of this survey will form part of an environmental geological survey presently being undertaken.

Brines.—A preliminary appraisal of information on brine deposits in Queensland was commenced. Initially this has been confined to the Fitzroy delta area.

Miscellaneous.—During the year further developments in the data storage and retrieval systems for groundwater projects have been made. Programs developed for the production of isopachs and structure contours have been particularly useful for regional studies.

GEOCHEMISTRY, PETROLOGY AND LABORATORY SERVICES

L. N. Wall, C. G. Murray, A. D. Robertson

GEOCHEMISTRY

Rockhampton Regional Geochemical Project.—A geochemical reconnaissance of the Rockhampton 1:250 000 Sheet area was designed to test the feasibility of producing regional geochemical maps with adequate resolution of geochemical features to materially aid mineral exploration and land utilization studies.

The analytical results and source area geology of all drainage sediment samples collected during 1972–73 were stored on magnetic tape, and maps showing the distributions of copper, lead, zinc, cobalt, and nickel were compiled manually at 1:250 000 scale on transparent topographic bases. Computer routines were used to relate the geochemical data to the geology, and estimates were made of the mean abundances, or background values, of the metals studied in sediments derived from the major geological units. The relationships between geochemical patterns and known mineralization were studied and, to some extent, anomalous dispersions of copper and zinc identified.

Further sampling was undertaken in the Mount Morgan, Ridgelands, and Rockhampton areas during two weeks in June to investigate some apparently anomalous drainages and to check the effects of manganese and ferric oxides on base metal values in the secondary environment. The results of this work have permitted a re-appraisal of the geochemical distributions and a final report was almost completed. All significant base metal mineralisation known in the area was detected and well defined geochemical patterns were outlined by this work.

Monto Regional Geochemical Project.—This project was undertaken to prepare geochemical maps similar to those of the adjoining Rockhampton 1:250 000 Sheet area, and to map the southward extension of geochemical patterns outlined in that area. Three weeks of systematic drainage sediment sampling were undertaken in the Monto and Scoria 1:100 000 Sheet areas late in the year, following orientation sampling.

Data storage and computing.—All data derived from both the Rockhampton and Monto projects are stored on magnetic files which can be interrograted by the FIND–2 Multiple Enquiry System operated by the EDP Branch of the Treasury Department. Details of the data storage system are described in a report entitled "Automatic data storage and retrieval system used by the Geological Survey of Queensland for the storage of geochemical data" by L. N. Wall and C. S. Liles (EDP Branch). The application of principal component analysis to simplify and rationalize data from the Rockhampton area was considered, and in particular the application of a CSIRO program designated POLYDIV.

Analytical studies.—An investigation was made into the problems of determining yttrium at low concentrations in basic rocks. The GSQ atomic absorption equipment was found to be inadequate and determination by spark-source mass spectrometry was recommended.

PETROLOGY

An article on mineralization in the Tasman Geosyncline in Queensland was prepared for publication in the AIMM volume on "Economic geology of Australia and Papua–New Guinea". An attempt was made to correlate particular types of ore bodies with characteristic lithologies, depositional environments and tectonic settings.

Discussions have continued on a plate tectonic interpretation of the geological history of eastern Queensland. It appears that this hypothesis may have valid application and a preliminary account has been prepared. The Palaeozoic and Mesozoic history of the area is characterized by the repeated development of west-dipping subduction zones above which large volumes of calc-alkaline plutonic and volcanic rocks were intruded and extruded. Tectonic events can be readily correlated with major changes in relative plate motions and the positions of plate boundaries when subduction commenced or ceased.

A visit was made to the Yarraman district to locate a "serpentine rock' originally described by Tommerup (1930). Loose blocks of dark ultramafics were found at the locality given but the rock is not a typical serpentinite. It is a biotite-hornblende-clinopyroxene-olivine peridotite, and is probably a cumulate from an alkalic basaltic magma. The biotite is a titanium-rich variety typical of alkalic peridotites, and the hornblende may be kaersutite. Rocks of this type have not previously been recorded from Queensland.

A brief submission on the nomenclature of extrusive and intrusive igneous rocks was prepared.

Routine petrographic descriptions were prepared for other Sections. A total of 781 thin and polished sections were prepared including 14 polished blocks. During 1974, 291 thin sections were added to the microslide collections, which now totals 7 114, and 269 specimens to the rock collection, which now totals 5 536.

A slide holding block for simultaneous grinding of 6 thin sections on the surface grinder was received. Operation of this equipment has proved quite satisfactory, and should greatly facilitate work in the future. Some delays have occurred during the year in the preparation of thin sections from poorly consolidated material requiring impregnation because suitable resins could not be obtained.

LABORATORY

The number of samples and specimens dealt with during the year fell to 358 involving 501 determinations. Samples forwarded to the Government Chemical Laboratory totalled 2 092 of which 2 033 were internal, and the remaining 59 were prospectors' samples submitted under the free assay scheme. The main interest was in gold, silver, copper and tin. The record high gold prices resulted in renewed prospector interest in alluvial gold deposits. Interest in gemstones was well maintained. A total of 35 mineral and rock specimen sets were supplied to schools.

GEOPHYSICS

P. Jones, Principal Geophysicist

D. E. Searle, R. D. Huber

The activities of the Section continued along much the same lines as in 1973 with the emphasis being placed on relatively large scale surveys. Field work was severely disrupted in the early part of the year by the prolonged wet season. New areas of investigation, those of marine seismic reflection profiling and work aimed at detecting coked coal *in situ* by geophysical methods, were entered for the first time.

RESISTIVITY SURVEYS

Amity and Point Lookout Water Supply.—Geophysical surveys were carried out in the Amity and Point Lookout areas of North Stradbroke Island. The objective of the D.C. resistivity work was basically to determine the quality of the water that might be expected from the aquifer and to determine its depth below the surface. A total of 18 electrical soundings were completed.

SEISMIC SURVEYS

Albert Shire Groundwater.—This survey was carried out to assist in assessment of the groundwater resources of the Albert Shire. The aim of the survey was to profile basement in areas of possible thick alluvium, to aid in the selection of areas to be further investigated by drilling. Ten lines, totalling 14·15 km of seismic refraction profile, were shot in the Oxenford, Mudgeeraba and Tallebudgera areas.

Pioneer Valley Groundwater.—The Irrigation and Water Supply Commission requested assistance in a hydrogeological survey of the Proclaimed Area in the Pioneer River Basin. The request was to conduct seismic refraction profiling along three north-south lines extending across the Proclaimed Area. To date, 13 km of profile has been shot along one line with the objective of determining depth, topography, and extent of weathering in the bedrock.

Amity and Point Lookout Water Supply.—About 3 km of seismic refraction profiling was carried out in conjunction with the D.C. resistivity surveying near Amity and Point Lookout on North Stradbroke Island. The objectives of the refraction work were to profile the bedrock surface and to determine the thickness of the aquifer in order to optimize areas for exploratory drilling and well development. The refraction work near Point Lookout confirmed the existence of a basement trough near the existing water supply bore.

North-South Freeway.—At the request of the Main Roads Department a seismic refraction survey was carried out in the Hamilton area between Kingsford Smith Drive and the Brisbane River. The aim of the survey was to determine depth of bedrock to assist in the siting of an approach road to a proposed bridge across the Brisbane River. Three lines, totalling about 1 km of profile, were obtained.

Advancetown Damsite.—Seismic refraction surveys were carried out in two areas to assist in the investigation of ancillary projects connected with the Advancetown Dam. Depth of bedrock profiles, totalling 270 m, were obtained at the site of a proposed road crossing of the Nerang River and at the site of an intake works pipeline crossing of Mudgeeraba Creek.

Proserpine River Damsite.—Five traverses giving 1 km of seismic refraction profile were shot at the 58·3 km damsite on the Proserpine River for the Irrigation and Water Supply Commission. The aim of the survey was to determine depth to bedrock along the axis of the proposed dam and to detect possible areas of deep weathering.

Finch Hatton Creek Damsite.—At the request of the Irrigation and Water Supply Commission a seismic refraction survey was carried out at the site of a proposed dam on Finch Hatton Creek, 5 km north of Finch Hatton. The aims of the survey were to determine the depth to bedrock, the depth of weathering and the location of any obvious structural faults in bedrock. Some 800 m of seismic refraction profile were obtained.

MINERAL SURVEYS

Grieves Quarry–Silverwood.—This work is centred on Departmental Reserve 43D (M.L.'s 23, 49, 51 (Warwick)). The aim of the survey was to assist in evaluation of Cu-Zn-Pb deposits. Some preliminary work was carried out in 1973, and in 1974 the geophysical grids were taken on a 50 m grid covering an area of about 0·5 km by 2 km at Grieves Quarry and on a 25 m grid, about 400 m square, at Silverwood. In addition, self potential measurements were taken at 10 m intervals along the 50 m grid lines at Grieves Quarry. A number of interesting anomalies were obtained in an approximate north-south line passing through known sulphide mineralization at Grieves Quarry. It is intended to carry out an induced polarization survey over these anomalies using our time domain IP equipment.

MARINE SEISMIC REFLECTION PROFILING

Moreton Bay Mapping Project.—The Marine Geology Group is currently engaged in a project to geologically map Moreton Bay at a scale of 1:25 000. To assist in the evaluation of the sub-bottom geology of the area a programme of marine seismic reflection profiling comprising a number of east-west lines, about 3 km apart, together with a number of north-south tie lines, was drawn up. It is estimated that to profile Moreton Bay in this manner will require the production of about 500 line km of seismic profile. To date 115 km of profile has been shot using the Survey's E G & G "Uniboom" system. Interpretation of these lines is proceeding.

MISCELLANEOUS

Geophysical Exploration for Coked Coal.—Investigations have begun to examine the feasibility of using geophysical methods to determine, *in situ,* the extent of coking coal deposits. To date a number of core samples have been tested to determine the physical properties of coal, coked coal, and intrusive and country rock that might be exploited by a geophysical survey. The parameters measured were magnetic susceptibility, A.C. conductivity, D.C. resistivity and chargeability. Further testing is required before any surveying is attempted in the field.

Seismic Interpretation.—A number of company seismic reflection sections from an area northwest of Charleville were re-interpreted for the Petroleum Geology Section. It was required to confirm that a small closure existed as it was planned to drill a stratigraphic bore on the closure.

Assistance was given to Irrigation and Water Supply Commission in the interpretation of hammer seismic refraction results obtained during an investigation of foundation conditions for a dam on Thames Creek, west of Warwick.

Seismic Refraction Computer Programme.—A deck of cards plus computer listing for a programme to analyse seismic refraction data has been received from the U.S. Bureau of Mines. The programme has been successfully adopted to run on the PDP 10 computer. However, certain anomalous results have been observed during the testing of the programme and a study of its workings has been initiated.

Equipment.—Regular maintenance of the Neltronic KM logger and the Widco logger has been carried out in the Section. Routine preventative maintenance was carried out on all geophysical equipment. A Sprengnether vibration meter belonging to Main Roads Department was restored to full working order after it had been totally immersed for a number of days during the January floods. In addition the magnetrons in the transponders of the Motorola RPS were retuned to their correct working frequency.

Several small items of equipment were built, including a Ni-Cad battery charger, an S.P. buffer system for use with high power A.C. & D.C. resistivity systems, a voltage regulator for use with the Motorola RPS transponders, and a system to produce event markers simultaneously on the marine seismic graphic recorder and the Motorola RPS range print-out.

PALAEONTOLOGY

P. J. G. Fleming, Principal Geologist, V. Palmieri, Senior Geologist
G. R. McClung (from February)

An appointment early in the year enabled a detailed study of Permian macrofaunal distribution in Queensland to be commenced. The stratigraphy of the Bowen Basin relies at present on a zonation of the Permian faunas developed ten or more years ago on a regional basis. Since then more detailed stratigraphic, sedimentologic, and palynologic knowledge has shown deficiencies in our knowledge which it is intended will be remedied. The work, which has already drawn considerable interest from people concerned with the Permian history of the State, is being conducted in co-operation with palynologists, and with the assistance of information supplied by other Sections. Collections have been made from outcrop in the Springsure district, from strata intersected in coal prospecting boreholes in the Clermont area, and from stratigraphic boreholes. Results so far suggest that some of the difficulties of correlation by macrofossils and apparent conflicts between palaeontology and palynology will be able to be resolved.

Studies of Tertiary and Recent foraminiferal faunas were continued. Preliminary correlations between the Capricorn Basin oil wells and Anchor Cay 1 in the Papuan Basin were completed. It was shown that the sedimentary break between Eocene and late Oligocene is of major regional importance in the eastern Australian region.

Examination of the microfaunal content of sediment samples from the Wynnum 1:25 000 Sheet area of Moreton Bay, commenced in 1973 has now been completed. Clear faunal zonations exist in the area, and benthonic faunas indicate that the area has undegrone an ecologic change in Holocene times from a normally saline inner shelf with sandy beaches and coral growth to a hyposaline muddy-floored lagoonal area. It may not be possible to extend this work in 1975 as originally planned, since staff numbers are small and other commitments are pressing. There is some suggestion from initial results that study of microfaunal distributions may provide a long term means of gaining information on environmental effects of physiographic and chemical changes.

As a companion project to that on Permian marine faunas, a study of the Permian microfaunas from wells and boreholes has been started. This work will concentrate on the stratigraphic distribution of forms with reference to the enclosing sediments and associated macrofossils.

Some work is currently in progress on the Tertiary oil shales at The Narrows where ostracods occur in abundance in the subsurface. Drilling is in progress once again in the area, and the investigation of fossils and sediments is directed at determining environmental trends which may be useful in assisting the current exploration.

A borehole from the Mitchell River Mission submitted by geologists of the Irrigation and Water Supply Commission was examined and yielded a microfauna of Pliocene to Pleistocene age. The material is similar in character to that of Beefwood 1, Rutlands Downs, reported on in 1973. Further work in the subsurface of this area may be rewarded by establishment of a Cainozoic stratigraphy. Further indentifications of floras and faunas from the Permian of the Duaringa and Emerald 1:250 000 Sheet areas were made as a result of collections submitted by the Coal Section.

Following the discovery late in 1973 of fossils in the Mount Nebo area, it was shown that the Neranleigh–Fernvale Beds of the area are of probable Carboniferous age, most likely Early Carboniferous. Further to a suggestion that a correlation might be established, the Curtis Island Group was examined during 1974 at most places where oolites are known to occur, from Mundubbera to Shoalwater Bay, and a large collection was made. The rocks of the Wandilla Formation (the feldspathic arenite of the Curtis Island Group) are practically identical with the Neranleigh–Fernvale Beds at Mount Nebo, and contain similar proportions of silicified oolites, but are not as rich in fossil echinoderm plates. Slender but positive evidence for a correlation is provided by the similarity of the circular plates found in the material so far examined, and by the presence of a single Crinoidea Elliptici plate in the Wandilla Formation at Shoalwater Bay.

Considerable effort was expended during the year in preparing a new catalogue of the type and figured collection which has grown greatly in recent years. Other collections held by the Section were also reviewed. Consideration was given to the possibility of computer storage of data about collections.

PALYNOLOGY

N. J. de Jersey, Principal Geologist

H. Hekel (to April), J. L. McKellar, J. F. Rigby

Activities continued to find application in regional stratigraphic investigations in several major sedimentary basins. Once again, the projects could be broadly divided into basic studies of reference sections, designed to provide and improve fundamental knowledge of the microfloras, and smaller projects of more restricted scope, bearing on local stratigraphic problems. The overall output of the Section was reduced, in comparison with the previous year, due to the transfer of one officer to another Section.

Projects in progress during the year were based on material of Permian, Triassic, and Jurassic age. Priority was given to studies of the Permian palynology of the Bowen and Galilee Basins. In the former, microfloras from the entire thickness of the classic section of the Springsure Anticline were examined to provide a palynological reference section. In the Galilee Basin, assemblages from two deep stratigraphic wells furnished evidence for a major hiatus in the sequence not readily apparent from lithologic evidence. In the field of Triassic palynology, a project was completed on material from the Callide Coal Measures. Material for Jurassic projects came from the Surat and Nambour Basins. In the Surat Basin, work was continued on establishing a palynological reference section, the next stage (to the top of the Injune Creek Group) being currently in progress.

The principal projects in progress during the year can be summarised, on the basis of the age of the sediments, as follows:—

Permian.—Investigation of the Permian sequence of the Springsure Anticline, originally assigned as separate projects to two members of the section, was carried towards completion as a joint project. The entire succession in this area, from the Orion Formation to the Blackwater Group, has now been examined and miospore assemblages have been recorded from 68 horizons covering a stratigraphic thickness of approximately 2 660 m. The microfloral sequence from this succession can be related directly to faunal biostratigraphic units and to palynological units defined by other workers. Furthermore, as the material has come from a series of continuously cored boreholes (GSQ Springsure 1 to 9), the assemblages can be related precisely to lithologic units. At the end of the year preparation of the final report, in a format suitable for the Publications Series, was well advanced.

Also in the Bowen Basin, cores from the Calen Coal Measures (from GSQ Hillalong N.S. 6) were processed, but did not yield any recognizable miospores. It seems likely that the sediments in these cores are too highly metamorphosed to yield identifiable palynomorphs.

In the Galilee Basin, a project based on samples from two deep stratigraphic wells, QDM Aramac 1 and QDM Hexham 1, was nearing completion at the end of the year. Of 41 samples processed, 32 yielded identifiable miospores, the assemblages ranging in age from Early Permian to Middle Triassic. On the basis of palynological units initially defined by Evans, there is evidence for a distinct time break in QDM Aramac 1 between strata yielding Stage 3 assemblages and overlying sediments containing a Stage 5 microflora. In QDM Hexham 1, assemblages from above the hiatus are similarly typical of Stage 5, while those below it are assigned to Stage 2. In each case, recognition of a time break from palynological evidence has significantly assisted stratigraphic interpretation of the lithologic sequence. A detailed palynological report is being prepared for publication as an appendix to a report by the Petroleum Geology Section.

Six samples from GSQ Jericho 1, also in the Galilee Basin, were examined. Those from the two lowest horizons were barren, but the remaining four yielded assemblages assigned to Stage 5 and consequently regarded as Late Permian in age.

Triassic.—Study of miospore assemblages from the Callide Coal Measures, previously regarded as entirely Triassic in age, showed that two distinct microfloras can be recognised. These are (a) an older microflora of Late Triassic age from the lower, coal-bearing section, which is approximately coeval with or slightly younger than the microflora of the Ipswich Coal Measures and (b) a younger microflora from the upper portion (dominantly massive quartzose sandstone), which is Early Jurassic in age and similar to microfloras from the Precipice Sandstone of the Surat Basin.

An additional project was concerned with the Permian-Triassic transition in the western part of the Bowen Basin. The objectives of this project are to provide data on the System boundary in this part of the basin and to study temporal and facies relationships between the coal measures of the Blackwater Group and the overlying Rewan Formation. By the end of the year, an initial study had been made of assemblages from GSQ Springsure 1 and GSQ Taroom 8, which penetrated the relevant part of the stratigraphic column. An interesting feature to emerge is that assemblages characteristic of Palynological Unit Tr 1a of Evans (now regarded as Late Permian in age) are present in each sequence. This unit was missing in the sequence recorded from the eastern side of the basin.

Jurassic.—A major undertaking was the study of the microfloral sequence in GSQ Mundubbera 1, a stratigraphic drillhole which penetrated the upper Evergreen Formation, Hutton Sandstone, and basal Injune Creek Group. Its completion constitutes a further stage in developing a palynological reference section through the entire Jurassic sequence of the Surat Basin as an essential prelude to regional microfloral correlation. The next portion of the stratigraphic column scheduled for study will extend to the top of the Injune Creek Group. To this end selected samples from GSQ Roma 1 and 4 have been processed, and initial study of the miospore assemblages has commenced.

Also in the Surat Basin, miospore assemblages have been examined from another stratigraphic drillhole, GSQ Leyburn RM2. This project was nearing completion at the end of the year. Results to date indicate that the essemblages present can be assigned to biostratigraphic units which in the Surat Basin are developed in the upper Precipice Sandstone and Evergreen Formation. Their equivalents in the Moreton Basin comprise the upper Woogaroo Sub-Group and part of the Marburg Formation. A feature of interest is the presence of coal seams in portion of the section penetrated. Their occurrence is indicative of a facies change in the area, as coal seams of such thickness are not normally encountered in the formations concerned.

Investigation of miospore assemblages from the Nambour Basin was based on samples from stratigraphic drillholes and from coastal outcrops, and was pursued in collaboration with the Regional Mapping and Engineering Geology Sections. The miospore assemblages are being related to reference sections in the Surat and Moreton Basins. These correlation studies will assist in elucidating the stratigraphic relationships of the various occurrences of Jurassic sediments in this basin.

PETROLEUM GEOLOGY

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P. J. Hawkins, C. F. J. Swarbrick (to October), C. I. Wallin

Petroleum exploration declined further in 1974. Only six exploratory wells were spudded, compared with 11 in 1973. Gas was discovered by Bridge Oil N.L. at Silver Springs in the southwestern Bowen Basin. Four appraisal wells were drilled in 1974, compared with none in 1973; all were located in the Kincora Gas Field between Roma and Surat.

The main activities of the Section continued along established lines, namely: (a) regional stratigraphic investigations supported by drilling and sedimentologic studies; (b) reservoir investigations. Two Departmental rigs—the Joy 45 and the Joy 225P—were employed throughout the year; their nett penetration totalled 4 165 m. In addition, two deep bores were drilled by contract. The sedimentary basins of the State were reviewed in preparation for a revision of Report 43: "Petroleum Resources of Queensland" (1970), and a summary report with this title was prepared for the 1975 APEA Conference. Routine duties included geological appraisal of operators' reports, maintenance of data reference systems, and response to various enquiries.

STRATIGRAPHIC INVESTIGATIONS

Bowen Basin.—Core drilling was initiated in the Warrinilla area of the Denison Trough to investigate Late Permian sandstone units which contain gas in sub-commercial amounts. The first bore—GSQ Taroom 8—was abandoned at 919 m in the Peawaddy Formation, because of drilling difficulties. It provided a useful section of the reservoir in the upper Peawaddy. Porosity was evident in the cores and drillstem testing was attempted. Mechanical difficulties were experienced; when a successful test was achieved, the reservoir did not produce fluid. It is suspected that mud filtrate may have caused swelling in the clay matrix of the sandstone. A second bore—GSQ Taroom 9—was at progress depth of 594 m in the Bandanna Formation at the end of the year.

Galilee Basin.—Core drilling on the western Springsure Shelf and the southeastern flank of the Koburra Trough was completed. This was the final phase of the project, begun in 1972, to establish the stratigraphic relationship of the Late Palaeozoic units of the Denison Trough, the Springsure Shelf, and the Koburra Trough. GSQ Springsure 13 obtained a section of the Joe Joe Group on the western Springsure Shelf. GSQ Jericho 2 cored the lower part of the Joe Joe correlative in the Alpha area. A report on the stratigraphic results of the project has been completed and reports on individual bores are in preparation.

Stratigraphic drilling was initiated in the northeastern sector of the basin. The first bore—GSQ Hughenden 1–2R—was sited near Torrens Creek, as the preferred site near Pentland was temporarily inaccessible. This bore was abandoned at 421 m in Warang Sandstone (Early Triassic) because of drilling difficulties. The second bore—GSQ Hughenden 3–4R—was located at the preferred site. It bottomed at 568 m in strata referred to the Ducabrook Formation of the Drummond Basin.

Special financial provision was made in December 1973 for deep petroleum stratigraphic drilling by contract in the north-eastern Galilee Basin. Two sites were selected in the Aramac area. The intention was to obtain stratigraphic data at depths beyond the limits of Departmental rigs, and to test the Late Palaeozoic beds for petroleum on favourable structures in tectonic zones not previously drilled in this part of the

TABLE—PETROLEUM STRATIGRAPHIC DRILLING IN 1974

Bore	Location		Total Depth	Stratigraphy	
				Top	Formation
	Lat.S	Long.E	Metres	Metres	
GSQ Hughenden 1–2R	20 48	144 57	421	Surface	Cainozoic
				52	Warang Sandstone
GSQ Hughenden 3–4R	20 40	145 22	568	Surface	Cainozoic
				63	Betts Creek Beds
				163	Boonderoo Beds
				418	Ducabrook Formation
GSQ Jericho 2 (Note 1)	23 37	146 33	1 200	Surface	Cainozoic
				55	Joe Joe Group
GSQ Springsure 13 (Note 2)	24 16	147 10	889	Surface	Colinlea Sandstone
				44	Joe Joe Group
				774	Ducabrook Formation
GSQ Taroom 8	25 02	148 34	919	Surface	Rewan Formation
				480	Bandanna Formation
				617	Black Alley Shale
				772	Peawaddy Formation
GSQ Taroom 9 (Note 3)	25 07	148 37	..	Surface	Rewan Formation
				550	Bandanna Formation
QDM Aramac 1	22 57	145 17	1 825	Surface	Wallumbilla Formation
				165	Ronlow Beds
				357	Moolayember Formation
				551	Clematis Sandstone
				645	Rewan Formation
				835	Bandanna Formation
				914	Colinlea Sandstone
				1 018	Aramac Coal Measures
				1 106	Jochmus Formation
				1 572	Jericho Formation
QDM Hexham 1	22 48	145 57	1 830	Surface	Moolayember Formation
				216	Clematis Sandstone
				309	Rewan Formation
				614	Bandanna Formation
				714	Colinlea Sandstone
				793	Jochmus Formation
				1 322	Jericho Formation

NOTES:—
1. Progress depth 172 m at end 1973.
2. Progress depth 257 m at end 1973.
3. Progress depth 594 m at end 1974.
4. All formation tops are tentative.

Galilee Basin. Contracts were let for all services: drilling, mud logging, wireline logging, drillstem testing, and velocity survey. Geological supervision was assigned to the Geological Survey, and drilling supervision to the Drilling Branch. All parties were advised that the operations would be carried out in accordance with The Petroleum Regulations (Land), 1966. For this purpose, the Chief Government Geologist was designated the operator, and the Principal Geologist was designated Person-in-Charge.

The first, QDM Aramac 1, was located at Lat. 22°57′S, Long. 145°17′E, on the Aramac Anticline—a closed structure defined by seismic reflections from the top of the Late Palaeozoic section. It was spudded on 19th March and completed on 20th April at total depth of 1 825 m. Casing was run to 186 m. Mesozoic beds were intersected from surface to 835 m, and Late Palaeozoic beds from there to total depth. The mudlog was run and cuttings samples taken from surface to total depth. Three conventional cores were cut and 23 sidewall cores were recovered. Wireline logs were run to 1 793 m, and a velocity survey was made. No show, other than methane associated with coal seams, was evident in the mud stream, cuttings or cores; porous sandstones were evident on the wireline logs, but onsite interpretation indicated that these were filled with water. One drillstem test was run over the interval 1 713–1 823 m; freshwater rose to surface in 35 minutes. Pressure data indicate that this sandstone has excellent reservoir properties. At it must pinch out westward against rising basement, there is considerable potential for stratigraphic trapping. On completion of the bore, five cement plugs were run to isolate the porous zones. The top plug was bumped at 385 m, and the hole left open to surface for pastoral water supply.

The second bore, QDM Hexham 1, was located at Lat. 22°48′S, Long. 145°57′E on the Hexham Nose, a gently plunging open anticline defined by seismic reflections from the top of the Late Palaeozoic section. Drilling was delayed by the effects of unseasonal rain on the unsealed roads between the two locations. In the interim the rig was released to Hematite Petroleum Pty. Ltd. for an exploratory well near Winton. QDM Hexham 1 was spudded on 11th July and was completed on 6th August at total depth of 1 830 m. Casing was run to 192 m. Mesozoic beds were intersected from surface to 614 m, and Late Palaeozoic beds from there to total depth.

The mudlog was run and cuttings samples were taken at intervals from casing shoe to total depth. No conventional core was cut; 24 sidewall cores were recovered. Wireline logs were run to total depth. Two minor shows (other than methane associated with coal seams) were recorded: (a) gas on the mudlog at 1 604 m; (b) trace fluorescence but no cut in cuttings from 1 713–1 716 m. Some porous sandstones were evident on the wireline logs, but onsite interpretation indicated that these were filled with water. No drillstem test was run. On completion of the bore, five cement plugs were run to isolate the porous zones. The top plug was bumped at 323 m, and the hole was left open to surface for pastoral water supply.

Much useful stratigraphic information was obtained from both bores. The Late Palaeozoic beds were tested on the two structures, to the reasonable limit of 1 830 m imposed by cost/benefit considerations. Although disappointing, the absence of petroleum in significant quantity was to be expected on statistical grounds, as none of the 14 exploratory wells in the north-eastern Galilee Basin has resulted in discovery. With respect to other mineral resources, the deep drilling penetrated very substantial thicknesses of Permian coal, though at presently uneconomic depths. It also discovered a major aquifer which could prove to be valuable in event of excessive drawdown of shallower aquifers in the Aramac area.

As a result of all these activities, new stratigraphic names were established for the Late Carboniferous to Early Permian succession in this region:—

Joe Joe Group ..
- Aramac Coal Measures
- Jochmus Formation (including Edie Tuff Member)
- Jericho Formation (including Oakleigh Siltstone Member)
- Lake Galilee Sandstone

The Aramac Coal Measures are developed in only part of the northeastern Galilee Basin, being absent from the Koburra Trough. They may represent a facies variant of the upper Jochmus Formation. Current investigations are directed towards applying this new nomenclature in the southern Galilee Basin, and relating it to the nomenclature used in the adjacent Cooper Basin.

Sedimentologic investigation of the so-called "Red Tuff Marker" in the Early Permian sequence of the northeastern Galilee Basin was continued. This feature is economically significant in that no coal has been found below it. Although it is known to cross lithologic boundaries as well as palynologic stage boundaries, its full significance could not be evaluated without further detailed lithostratigraphic work. Accordingly a facies analysis of the Permian sequence in the northeastern sector of the basin was begun. The sequence was divided into three time-rock units, and various lithofacies and palaeoenvironmental maps were prepared. When it became evident that more control was needed to resolve the relationship of the lower two units, attention was concentrated on the top unit—the mainly Late Permian "Stage 5". This unit has considerable economic importance in that it contains the main coal resources of the basin. Lithologic correlation has established that it is correlative with the sequence Colinlea Sandstone–Bandanna Formation of the Springsure Shelf.

Moreton Basin.—Before the report on stratigraphic drilling of the Bundamba Group on the Ipswich 1:250 000 Sheet area was finalised, the existing biostratigraphic correlation of the lower units across the West Ipswich Fault was reviewed. A new relationship was postulated on lithologic evidence, and its validity was tested by sedimentologic study of core samples. It was postulated that (a) the Aberdare Conglomerate and Raceview Formation of the type area east of the West Ipswich Fault were not intersected in Departmental drilling west of the fault; and (b) the basal beds of the Bundamba Group west of the fault are correlative with the middle of the Ripley Road Sandstone (which overlies the Raceview Formation in the type area).

Other Basins.—Reports were prepared on the results of Departmental core drilling prior to 1974 in the Eromanga Basin (GSQ Tambo 2) and the Hillsborough Basin (GSQ Proserpine 1–2Ra and 3).

RESERVOIR INVESTIGATIONS

The geology of the Bennett Oil Field, and the Leichhardt and Kincora Gas Fields was reviewed in order to assist in reservoir investigations by the Petroleum Engineer. The Bennett Oil Field lies in the eastern Surat Basin, about 60 km north of Moonie. It was discovered by Union Oil Development Corporation in 1965. Oil occurs at about 1 625 m in the upper Precipice Sandstone ("56–4 sand") of Early Jurassic age; the trap is structural-stratigraphic. Including the discovery, four wells have been drilled in the field; three were completed for production and one abandoned. Initial recoverable reserves of oil as calculated at 30–9–74 were 105 m^3 x 10 m^3. Production began in 1966, by trucking to the Moonie terminal.

The Leichhardt Gas Field also lies in the eastern Surat Basin, about 40 km southwest of the Bennett Oil Field. It was discovered by Union Oil Development Corporation in 1966. Gas occurs at about 1 540 m in the upper Evergreen Formation of Early Jurassic age; the trap is structural-stratigraphic. Including the discovery, three wells have been drilled in the field; only the discovery was completed for production, the two appraisal wells being abandoned. Initial recoverable reserves of gas as calculated at 30–9–74 were 96 m^3 x 10^6. The field has not been brought into production.

The Kincora Gas Field lies in the western Surat Basin and underlying southern Bowen Basin, about 50 km south of Roma. It was discovered by Pexa Oil N.L. in 1970. Gas occurs below about 1 400 m, in the middle and lower Evergreen Formation of Early Jurassic age, and in a "granite wash"; the trap is structural-stratigraphic. Including two dry exploratory wells and the discovery, ten wells have been drilled in the field; seven were completed for production and three abandoned. Initial recoverable reserves as calculated at 30–9–74 were 620 m^3 x 10^6 of gas and 9 m^3 x 10^3 of condensate. The field has not been brought into production, but negotiations have been made with Associated Pipelines Ltd. for connection to the Roma–Brisbane line.

REGIONAL MAPPING

R. W. Day, Principal Geologist

G. W. Hofmann, Senior Geologist

W. G. Whitaker, H. Schwarzböck (to May), J. D. Smith (to May), H. Hekel (from May), I. H. Wilson, K. G. Grimes, P. R. Murphy, L. C. Cranfield, I. W. Withnall, P. J. Slater (to February), T. A. Noon, M. R. Jones, D. L. Trezise (from February), L. J. Hutton (from May)

The Section was responsible for regional mapping at 1:100 000 and 1:250 000 scales, marine geological and environmental geological projects, and contributions to the mapping at 1:100 000 and 1:250 000 scales by joint parties of the B.M.R. and G.S.Q. Details of the progress of these activities are given below.

G.S.Q. MAPPING PROGRAMME

Commencement of semi-detailed mapping in the Caboolture 1:100 000 Sheet area marked the beginning of a major project designed to meet the long standing need for accurate geological maps of the Moreton Region at scales larger than 1:250 000. The major part of the mapping effort was directed towards this project. Field work, which was initially delayed by the shortage of serviceable 4-wheel drive vehicles, was expedited by the purchase of a trail bike. This enabled rapid access into rugged parts of the D'Aguilar Range otherwise accessible only on foot. At the year's end mapping was well advanced.

A second new project involved the compilation of a smaller scale (1:500 000) geological map of the entire Moreton region and parts of surrounding districts. This map will satisfy the demand previously met by the geological map of the Moreton District at a scale of 6 miles to the inch.

Preliminary work began on a third new project late in the year. This entails the geological mapping of the Wide Bay and Sandy Cape 1:250 000 Sheet areas. On completion of these maps there will be total coverage of Queensland by maps of 1:250 000 scale.

Throughout the year work continued on the preparation of reports and maps on Sheet areas previously investigated. Geological maps of the Brisbane and Bundaberg 1:250 000 Sheet areas, and a major report and map of the Mundubbera 1:250 000 Sheet area were published. The map of the Gympie 1:250 000 Sheet area was almost ready for printing in December.

The programme of radiometric dating conducted with the co-operation of the Department of Geology and Mineralogy, University of Queensland, continued to yield valuable results.

Compilation of the new geological map of Queensland at 1:2 500 000 scale was virtually completed in 1974.

Caboolture Project.—Initial work commenced in March and by May, when field work began, three geologists were engaged on the project. Mapping was well advanced by the year's end, and preliminary 1:25 000 scale compilation sheets were prepared for most of the area. Progress reports were written on the geology of Somerset Dam, Lowood, Samford, and Caboolture 1:50 000 Sheet areas, which are the component quadrants of the Caboolture 1:100 000 Sheet area. These amplify the geology shown on the compilation sheets. The Permian Northbrook Beds were found to be more extensive than is depicted on the Ipswich 1:250 000 Sheet and much new information was obtained on the Rocksberg Greenstone, Bunya Phyllite, and Neranleigh–Fernvale Beds. A more complete understanding of the complex geology of the D'Aguilar Block will result from this work.

Gympie Project.—Four officers completed a report on the geology of the Gympie 1:250 000 Sheet area. At the end of the year this report was awaiting editing. Several short field inspections were made in an endeavour to resolve problems in the Upper Palaeozoic–Lower Mesozoic sequences. On one of these a bryozoan fossil of probable Late Palaeozoic age was found in the Amamoor Beds. This substantiated previous unconfirmed reports of marine fossils in this unit. The geological map of the Gympie Sheet area was compiled at 1:250 000 scale and by late December the drafted version was ready for final checking prior to publication.

Ipswich–Brisbane project.—The major activity involved revision for publication of the comprehensive report on the geology of the Ipswich and Brisbane 1:250 000 Sheet areas. Two officers were engaged in this work, which was hampered by the resignation of one of the co-authors of the report. At the end of the year this task was approaching completion. Two papers were published. One documented the discovery of the first identifiable and stratigraphically significant fossils in the Neranleigh–Fernvale Beds; the other revised certain stratigraphic nomenclature used in the Ipswich Sheet area.

Mundubbera Project.—Two officers undertook final editing and checking of the map and major report on the Mundubbera 1:250 000 Sheet area.

Bundaberg Project.—During the year, an officer was engaged on this project on a part time basis. A detailed report on the geology of the Bundaberg Sheet area, prepared in conjunction with P. L. Ellis, a former officer, was completed for initial editing.

Fraser Island Project.—Preliminary work on the geology of the Wide Bay and Sandy Cape 1:250 000 Sheet areas was commenced late in 1974. Geological maps of these areas will complete the coverage of Queensland with maps at 1:250 000 scale.

Geological Map of Moreton District.—Preparation of a new geological map of the Moreton District and surrounding regions was commenced. The map which is bounded by latitudes 26 and 29 S and longitude 151 E and the coast, will incorporate the geology of the Gympie, Ipswich, Brisbane, Warwick, and Tweed Heads 1:250 000 Sheet areas, and that of the eastern one-third of the Chinchilla, Dalby, and Goondiwindi Sheet areas. A diagramatic reference was designed to show the overall inter-relationships of the large number of stratigraphic units in the region. The Drafting Section drew a special topographic base for the map and commenced compilation of the geology from the component 1:250 000 scale maps.

Geological Map of Queensland.—Compilation of the new geographical map of the State at 1:2 500 000 scale was virtually complete at the end of the year following revision of the preliminary compilation sheets at 1:1 000 000 scale. A new version of the diagrammatic reference legend was prepared together with a mock up at 1:2 000 000 scale which will be used for colour planning.

JOINT MAPPING PROGRAMME

Work continued on three of the four previously initiated joint mapping projects of the Bureau of Mineral Resources and the Geological Survey of Queensland. The Carpentaria Basin project is approaching completion and there is almost total coverage of the basin by 1:250 000 scale maps. Good progress was made on the Cloncurry–Mount Isa and Georgetown projects, which aim to remap these mineralized areas of the State at 1:100 000 scale. Work on the Westmoreland project was curtailed by the resignation of the officer concerned.

The officer concerned with the first project prepared contributions for Explanatory Notes on the Walsh and Holroyd 1:250 000 Sheet areas, a paper on the nomenclature of Mesozoic and Cainozoic rocks of Cape York Peninsula, and a paper on the south-eastern part of the Karumba Basin. The last mentioned is a new term to describe the Cainozoic part of the Trans-Australian Platform cover which overlies the Mesozoic Carpentaria Basin. Current work is directed towards the preparation of a final report on the geology of the entire Carpentaria Basin and explanatory notes for sheet areas not covered by first edition coloured maps.

Cloncurry–Mount Isa Project.—During the 1974 field season, which extended from May to October, the Kennedy Gap 1:100 000 Sheet area was mapped geologically and surveys were made of the Precambrian rocks exposed in the Yelvertoft, Wooroona, Bullecourt, and Templeton 1:100 000 Sheet areas. Two officers participated in the project, one as geological party leader. Summaries of mineral exploration conducted in the Cloncurry 1:250 000 Sheet area up to 1973 were prepared, together with contributions to a report on the geology of the Prospector 1:100 000 Sheet area. Contributions were made to Records on the Mount Isa Fault Trough and the geology of the Mary Kathleen 1:100 000 Sheet area.

Georgetown Project.—Field work during the period June to September resulted in the geological mapping of the Georgetown 1:100 000 Sheet area and the completion of the coverage of the Forsayth 1:100 000 Sheet area. Again use was made of helicopters for traverses into areas of difficult access. A geochemical party staffed by personnel from the Bureau of Mineral Resources undertook stream sediment sampling in the Forsayth 1:100 000 Sheet area. Contributions were made to reports on the geology of the Forsayth 1:100 000 Sheet area and the pre-Mesozoic geology of the Red River 1:250 000 Sheet area. A summary of mineral exploration in the Georgetown region up to 1973 was prepared.

Westmoreland Project.—No field work was undertaken in connection with this project in 1974. Prior to his resignation in February, the officer concerned completed contributions to a report on the geology of the Hedley's Creek 1:100 000 Sheet area. Participation in this project is suspended pending the resumption of geological mapping.

MARINE GEOLOGY

Systematic mapping of Moreton Bay continued and a report on the pilot study in marine geological mapping undertaken in the Wynnum 1:250 000 Sheet area was completed.

Marine seismic equipment purchased during the year was brought into operation by the Geophysics Section, and all seismic traverses planned for the southern part of Moreton Bay (i.e. the area covered by the Brisbane and Amity 1:50 000 Sheet areas) were completed. Grab sampling of this area was in progress at the year's end.

A shallow penetration coring device was hired during June and performed impressively. About 100 m of undisturbed core was obtained from 60 sites in water depths ranging from 1 m to 33 m. These cores revealed the nature of the first seismic reflector mapped in the Wynnum 1:25 000 Sheet area. This reflector largely emanates from a stiff, oxidized, presumably subaerially weathered clay, and correlates closely with the —4 m submerged strandline previously reported from the Wynnum area. There is also evidence for submerged strandlines 7 m and 20 m below present mean sea level.

The results of the Moreton Bay study will be embodied in a report accompanied by a series of maps showing bathymetry, bottom sediment type and thickness, nature and depth of bedrock, and will provide the basis for an understanding of the detailed geological history of the Bay. This information could materially assist in the management of the commercial and recreational resources of Moreton Bay.

ENVIRONMENTAL GEOLOGY

An environmental geological study of the Pine Rivers Shire was commenced in February. Two officers undertook this work on a part-time basis. The project was conceived as a pilot study aimed at providing an inventory of geological data useful for land use planning. Good progress was possible because much of the basic data were derived from the semi-detailed geological mapping of the Caboolture 1:100 000 Sheet area, which proceeded simultaneously. By the end of the year collection of basic data was complete. A series of interpretive maps showing land use suitabilities will be available to statutory planning authorities in 1975.

A contribution to the interdepartmental study of land use in the North Pine Dam Catchment area, which was begun in September 1973, was completed in February. Recommendations focus attention on the conservation of resources of construction materials and on geological constraints on urban development.

Reports were prepared on geological aspects for environmental impact studies on the proposed Denison Creek Dam, southeast of Nebo; the proposed Three Moon Creek Dam, north of Monto; the proposed Pioneer River Dam, southwest of Mackay; and the proposed highway crossing of Tallebudgera Creek on the Gold Coast.

Assessments of environmental impact studies were made in relation to a proposed residential subdivision of the Pine Rivers Shire; the re-opening of the Mary Kathleen uranium mine; and a proposed limestone quarry near Mount Larcom, west of Gladstone.

OTHER ACTIVITIES

ERTS.—A report was prepared on the usefulness of Earth Resources Technology Satellite (ERTS–1) imagery. This report, which fulfilled the requirements of the Principal Investigator status granted to the Geological Survey, was forwarded to the Australian Committee for ERTS investigations for submission to the National Aeronautical and Space Agency (NASA), Houston, U.S.A.

IGC.—Three officers were involved in planning excursions for the International Geological Congress to be held in Sydney in 1976.

Aus.I.M.M.—Four officers were involved in the activities of the Annual Conference of the Australasian Institute of Mining and Metallurgy. A total of two weeks was spent in field checking the planned routes and itineraries of seven tours, and guide books were also prepared.

By Authority: S. G. Reid, Government Printer, Brisbane

Cover Photo:
BRECCIATED COPPER ORE FROM THE MOUNT ISA AREA.
(Courtesy of V. S. Daddow, Jnr.)