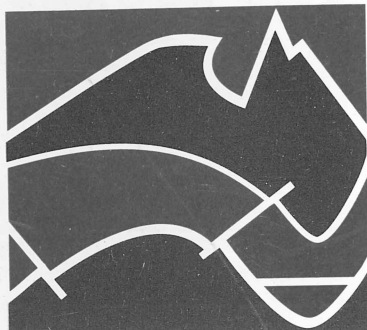


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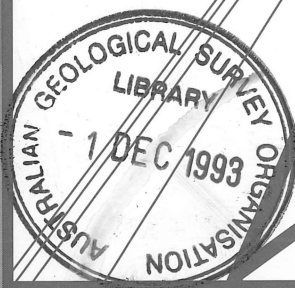
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O R G A N I S A T I O N

Summary of geoscientific information for the East Kimberley, Western Australia, with specific reference to the Dixon Range 1 : 250 000 Sheet (SE/52-6) and Gordon Downs 1 : 250 000 Sheet (SE/52-10) by Dean M. Hoatson

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Record 1993/32

MINERALS AND LAND USE PROGRAM

AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

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East Kimberley, Western Australia, with specific
reference to the Dixon Range 1 : 250 000 Sheet (SE/52-6)
and Gordon Downs 1 : 250 000 Sheet (SE/52-10)**

Record 1993/32

Dean M. Hoatson

Minerals and Land Use Program

A product of the National Geoscience Mapping Accord



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DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister for Resources: Hon. Michael Lee, MP

Secretary: Greg Taylor

AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

Executive Director: Harvey Jacka

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Contents

SUMMARY.....	5
INTRODUCTION	5
GEOLOGICAL FRAMEWORK AND MINERALISATION OF THE HALLS CREEK OROGEN, EAST KIMBERLEY	8
Gold	11
Diamonds	15
Copper, lead, and zinc	16
Rare-earth elements	18
Nickel-copper and chromium-platinum-group elements.....	18
Tin and tungsten	20
GEOPHYSICAL SURVEYS	20
GEOCHRONOLOGY.....	22
WHOLE-ROCK GEOCHEMISTRY.....	26
MINERAL OCCURRENCES.....	29
RECENT AERIAL PHOTOGRAPHY	30
COMPANIES	30
BIBLIOGRAPHIES	34
Index A ₁ - references pertaining to the Dixon Range 1 : 250 000 Sheet.....	34
Index A ₂ - references by commodities pertaining to the Dixon Range 1 : 250 000 Sheet.....	44
Index A ₃ - references by location/prospect name pertaining to the Dixon Range 1 : 250 000 Sheet	44
Index B ₁ - references pertaining to the Gordon Downs 1 : 250 000 Sheet.....	46
Index B ₂ - references by commodities pertaining to the Gordon Downs 1 : 250 000 Sheet	55
Index B ₃ - references by location/prospect name pertaining to the Gordon Downs 1 : 250 000 Sheet.....	55
Index C - general references pertaining to the East Kimberley.....	56
ACKNOWLEDGEMENTS.....	76

FIGURES

1. Location of the Dixon Range and Gordon Downs 1 : 250 000 sheets in the East Kimberley	6
2. Regional tectonic setting of the Halls Creek Orogen	8
3. Geology and major mineral deposits of the East Kimberley	9
4. Geophysical surveys in the Dixon Range 1 : 250 000 Sheet	21
5. Geophysical surveys in the Gordon Downs 1 : 250 000 Sheet	22
6. Location of ROCKCHEM and OZCHRON samples in the Dixon Range 1 : 250 000 Sheet	27
7. Location of ROCKCHEM and OZCHRON samples in the Gordon Downs 1 : 250 000 Sheet	28

TABLES

1. Early Proterozoic stratigraphy of the Lamboo Complex, East Kimberley	10
2. Gold, tin, lead, and silver production data from the East Kimberley	13
3. Details of geophysical surveys in the Dixon Range 1 : 250 000 Sheet	23
4. Details of geophysical surveys in the Gordon Downs 1 : 250 000 Sheet	24
5. Summary of Precambrian geochronological data for the Kimberley region	25
6. Deposits listed in MINLOC for the Dixon Range 1 : 250 000 Sheet	31
7. Deposits listed in MINLOC for the Gordon Downs 1 : 250 000 Sheet	32
8. Exploration companies that have recently operated in the East Kimberley	33

SUMMARY

This record describes the geology, mining history, mineral resources, and exploration activities for the Dixon Range (SE/52-6) and Gordon Downs (SE/52-10) 1 : 250 000 Sheet areas in the East Kimberley, Western Australia. The study forms part of the National Geoscience Mapping Accord Kimberley-Arunta project. The northwestern part of the two sheets covers a structurally complex northeast-trending Early Proterozoic terrane (called the Lamboo Complex) that contains metasediments, mafic and felsic volcanics, and felsic, mafic, and ultramafic intrusives; the southeastern part of the sheets consists largely of Proterozoic sediments of the Birrindudu Basin and Palaeozoic volcanics and sediments of the Ord Basin.

The gold potential of the Kimberley region was first highlighted in 1879 by the explorer Alexander Forrest and later by the government geologist E. T. Hardman. It was Hardman's report of 1885, covering his second trip into the Kimberley, that sent prospectors Charles Hall and John Slattery on their way to the first discovery of payable gold in the vicinity of Old Halls Creek. Early in 1885, Hall and Slattery arrived in Derby carrying with them 106 ounces of gold. By claiming the one thousand pounds government reward offered at that time for the finders of payable gold in Western Australia they started the Kimberley gold rush.

The alluvial gold deposits are generally related to fault-controlled quartz lodes that are hosted by low-grade metasediments of the Halls Creek Group and are confined to a narrow stratigraphic zone between the Olympio and Biscay Formations, adjacent to sills of Woodward Dolerite. The Ruby Creek area was the most productive (total production of 313.7 kg) region of hardrock and alluvial gold, followed by Mary River Goldfield (108.2 kg), Brockman area (103.1 kg), and Halls Creek area (21.3 kg). Total recorded gold production in the East Kimberley, up to 1963, was about 880 kg, most of it reef gold mined before 1900. Recent mining operations have been restricted to small-scale mining of alluvial gold in the Mary River area (67.5 kg produced in 1988-90) and Grants Creek-Panton River area (27.9 kg produced in 1988).

Various styles of precious, base-metal, and rare-earth element mineralisation have been documented throughout the Dixon Range and Gordon Downs 1 : 250 000 sheets, but there is no economically significant deposit currently being mined. Mineralisation types that have attracted greatest interest include epithermal gold, stratabound volcanogenic base-metal sulphides, volcanogenic rare-earth elements, magmatic Ni-Cu and Cr-platinum-group elements (PGEs) in layered mafic-ultramafic intrusions, diamondiferous pipes of lamproitic and kimberlitic affinities, sediment-hosted uranium, and metapelite-hosted stratabound tungsten.

This record contains a comprehensive listing of published documents, company reports, theses, and geophysical, geochronological, geochemical, and mineral occurrence data that will assist exploration activities, resource assessment, and land-use decision making in the East Kimberley.

INTRODUCTION

This study forms part of the National Geoscience Mapping Accord Kimberley-Arunta project undertaken jointly by Australian Geological Survey Organisation (AGSO) and the Geological Survey of Western Australia (GSWA). The National Geoscience Mapping Accord, endorsed by the Australian (now Australian and New Zealand) Minerals and Energy Council in August 1990 is a joint

Commonwealth/State/Territory initiative to produce, using modern technology, a new generation of geoscientific maps, data sets, and other information about strategically important regions of Australia over the next 20 years.

This record is a compilation of geological, mineral resources (including hydrogeology and petroleum), geophysical, geochronological, and geochemical information that will assist exploration activities, resource assessment, and land-use decision making in the East Kimberley. With the exception of the company reports and university theses, most of the contained information is published and readily accessible. It is hoped that this record will (1) be a useful source of geoscientific data for government, mineral industry, and other research organisations, and (2) provide some insight into the many databases available for purchase from AGSO, GSWA, and the Bureau of Resource Sciences (BRS). The compiled information focuses on the Dixon Range and Gordon Downs 1 : 250 000 Sheet (SE/52-6 and SE/52-10) areas of northeastern Western Australia, but more general references relating to the Kimberley are also included in the bibliography.

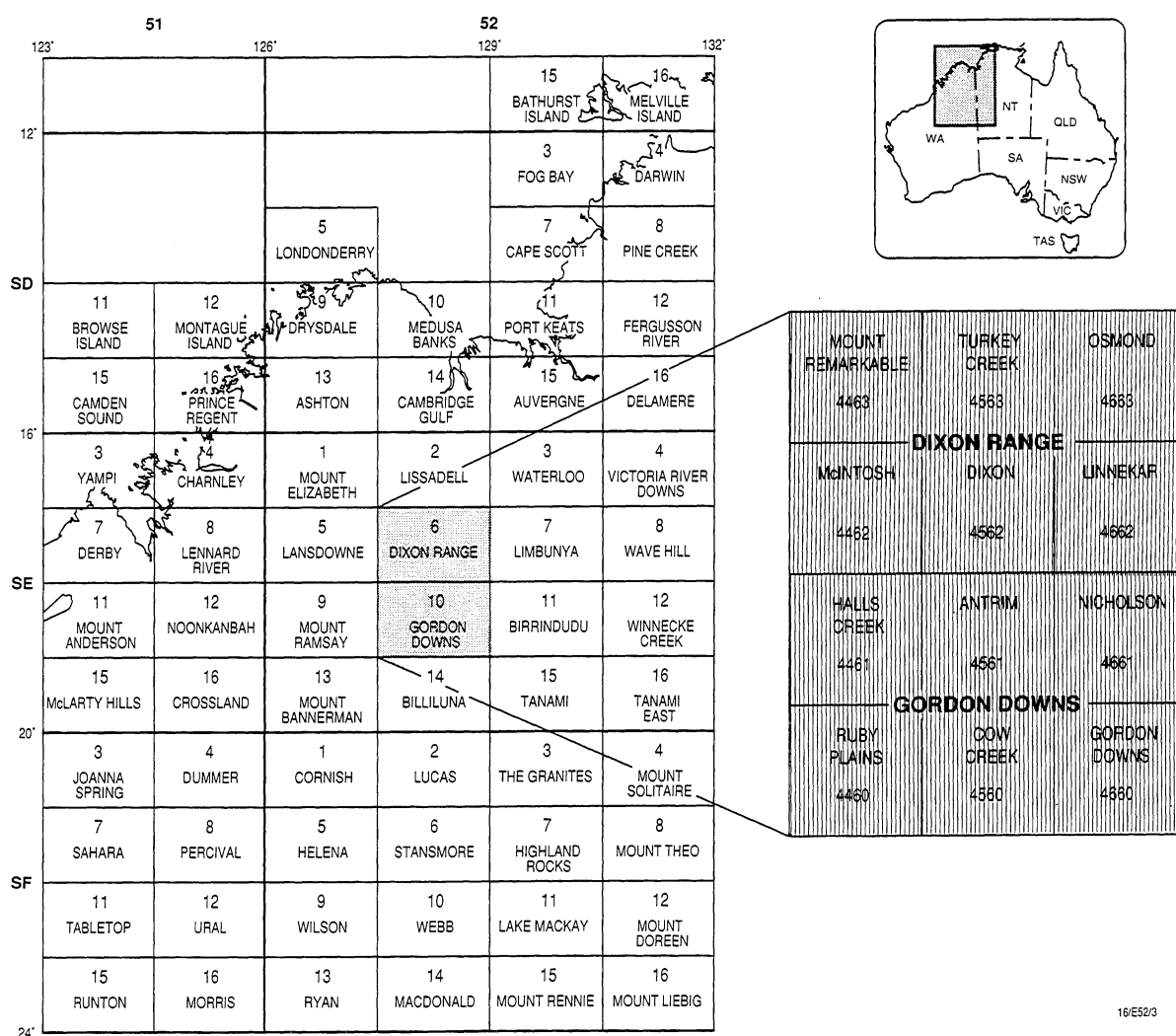


Figure 1. Location of the Dixon Range and Gordon Downs 1 : 250 000 sheets and their 1 : 100 000 component sheets.

The Dixon Range and Gordon Downs 1 : 250 000 sheets are bounded by longitudes 127°30'E and 129°00'E and latitudes 17°00'S and 19°00'S, and are composed of the twelve 1 : 100 000 sheets as indicated in Figure 1. Approximately two thirds of the Dixon Range 1 : 250 000 Sheet and one third of the Gordon Downs 1 : 250 000 Sheet are represented by Proterozoic rocks and the rest of both sheets by Palaeozoic volcanics and sediments and Cainozoic sediments. The Proterozoic rocks include the Early Proterozoic Lamboo Complex (as defined below) in the west which is unconformably overlain on its eastern margin by younger Proterozoic sediments and volcanics including Late Proterozoic rocks of glacial origin. The north-northeast-trending Halls Creek, Springvale, and Greenvale fault systems in the western half of the sheet areas are some of the major structural elements in the East Kimberley.

The information contained here is derived from a number of databases housed by AGSO, BRS, GSWA, and the Australian Mineral Foundation (AMF). References in the bibliography were collected from AGSO, WAMEX (Western Australia Mineral Exploration - database of open-file company reports on mineral exploration activity in Western Australia compiled by the GSWA, Western Australia Department of Minerals and Energy), the Australian Earth Sciences Information System (AESIS) of the AMF, university libraries, and from various published geological documents. The company reports in the bibliography were synthesised from WAMEX for the period 1954-1991. For details of individual prospects the appropriate open-file company report will have to be scrutinised in the GSWA library.

The bibliography contains over 560 references and is divided into three major indexes (A = Dixon Range, B = Gordon Downs, and C = East Kimberley) and three sub-indexes (1, 2, and 3):

Index A₁ - references pertaining to the Dixon Range 1 : 250 000 Sheet

Index A₂ - references by commodities pertaining to the Dixon Range 1 : 250 000 Sheet

Index A₃ - references by location/prospect name pertaining to the Dixon Range
1 : 250 000 Sheet

Index B₁ - references pertaining to the Gordon Downs 1 : 250 000 Sheet

Index B₂ - references by commodities pertaining to the Gordon Downs 1 : 250 000 Sheet

Index B₃ - references by location/prospect name pertaining to the Gordon Downs
1 : 250 000 Sheet

Index C - general references pertaining to the East Kimberley

The specifications for the geophysical surveys were obtained from the database MAGCAT (1990: GSWA), the geochronological data from published references and the database OZCHRON (1993: AGSO), the whole-rock geochemical data from the database ROCKCHEM (1993: AGSO), and the mineral occurrence data from the database MINLOC (1992: AGSO and BRS). These databases or component data sets of these databases can be purchased from the relevant organisations.

Most of the references listed in the following 'Geological Framework and Mineralisation' and 'Database' sections are from Bibliography C in this record, however, some references that pertain to the Dixon Range and Gordon Downs 1 : 250 000 sheets will be found in Bibliography A₁ and B₁, respectively.

GEOLOGICAL FRAMEWORK AND MINERALISATION OF THE HALLS CREEK OROGEN, EAST KIMBERLEY

The Lamboo Complex, which forms the central part of the Halls Creek Orogen (as defined by Griffin & Grey, 1990) in the East Kimberley, is a major northeast-trending linear zone of Early Proterozoic (~1920-1830 Ma) sedimentation, deformation, metamorphism, and voluminous mafic and felsic volcanic and plutonic igneous activity situated between the Kimberley Basin and the Sturt Block of northwestern Australia (Fig. 2). The Lamboo Complex has been the focus of many geoscientific investigations and exploration activities since the first reconnaissance investigations were carried out by Hardman (1883, 1884, 1885).

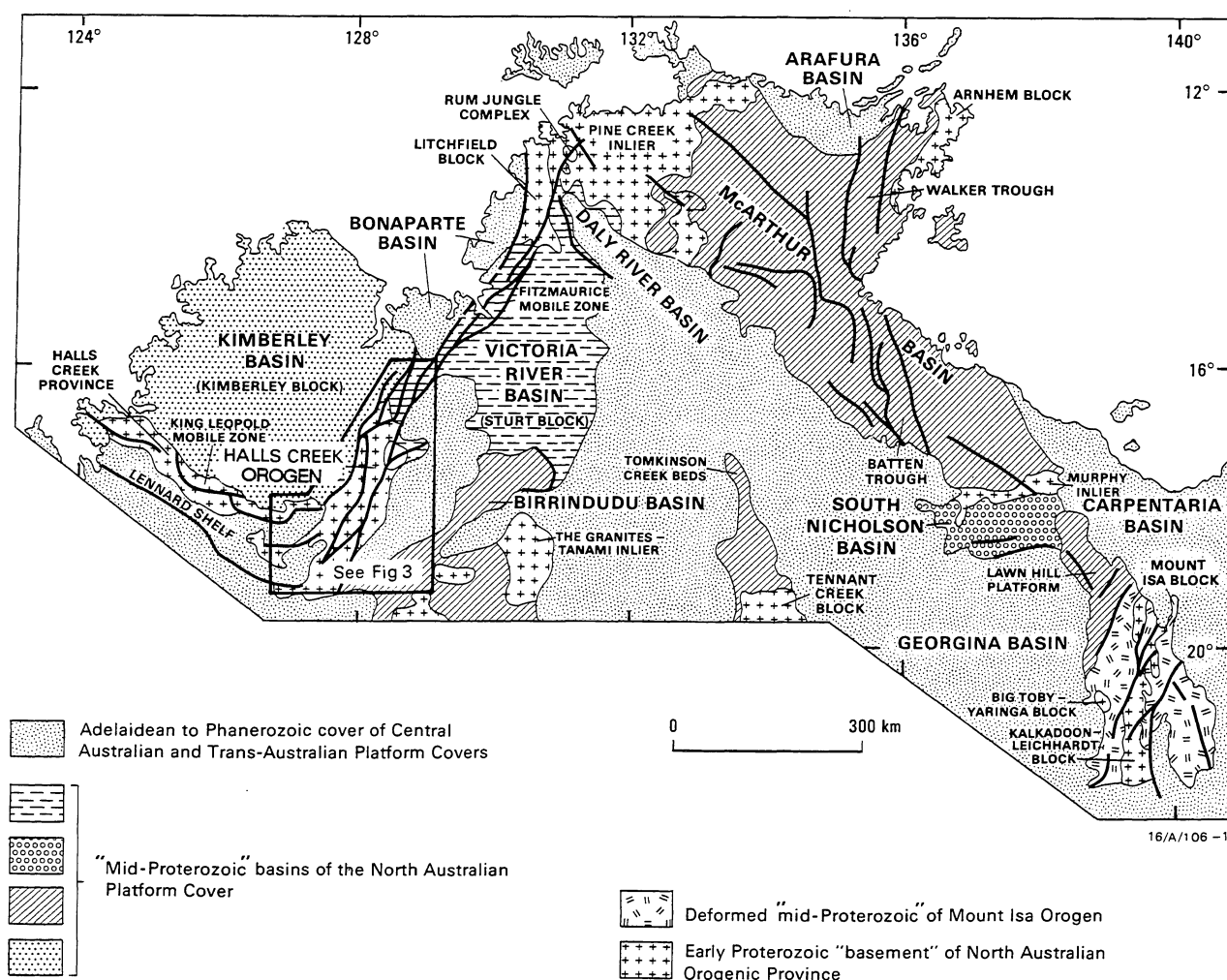


Figure 2. Regional tectonic setting of the Halls Creek Orogen, northern Australia (modified after Plumb, 1990b).

The general geological framework of the Halls Creek Orogen (Fig. 3) has been recently reviewed by Page & Hancock (1988), Plumb (1990a), Griffin & Grey (1990), and Griffin & Tyler (1992). The following summary is largely based on these publications and on earlier work in the area by Dow & Gemuts (1969) and Gemuts (1971).

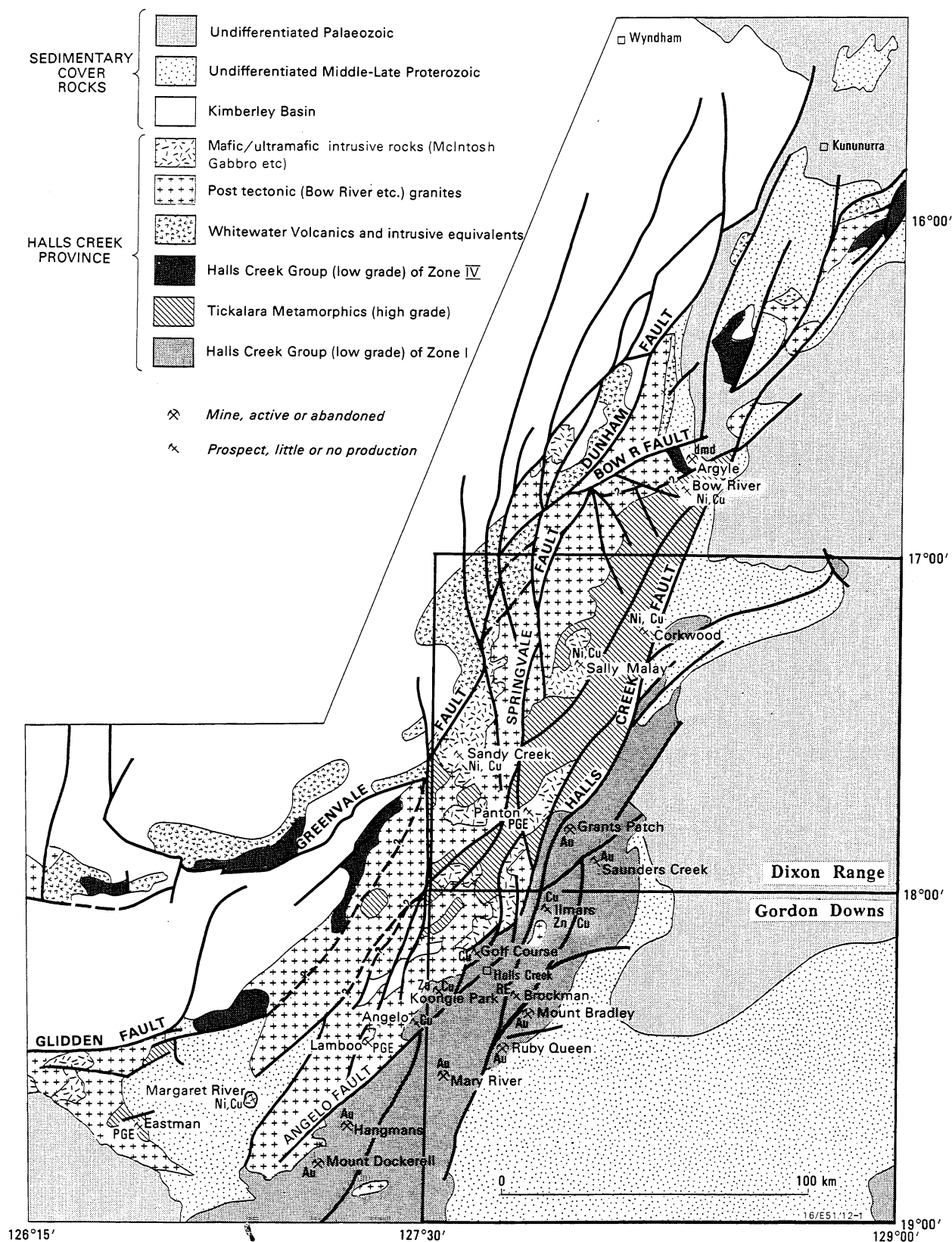


Figure 3. Geology and major mineral deposits of the Halls Creek Orogen, East Kimberley (modified after Plumb, 1990a). The location of the Dixon Range and Gordon Downs 1 : 250 000 sheets are indicated by the rectangles.

The oldest rocks exposed in the Lamboo Complex (as defined by Griffin & Grey, 1990) are sedimentary and volcanic rocks of the Halls Creek Group, and the metamorphic equivalents of these rocks, the Tickalara Metamorphics. The Halls Creek Group (Table 1) comprises four formations: Ding Dong Downs Volcanics, Saunders Creek Formation, Biscay Formation, and the Olympio Formation. The major rock types consist of mafic and felsic volcanics and minor intercalated sediments (Ding Dong Downs Volcanics), cross-bedded quartzite, arkosic quartzite, arenite, and conglomerate (Saunders Creek Formation), mafic and felsic volcanics, volcanoclastic sediments, calc-silicate rocks, marble (Biscay Formation), and quartz-feldspar lithic wacke of turbiditic origin and minor felsic volcanics (Olympio Formation). The Halls Creek Group was intruded by sills and dykes of the Woodward Dolerite, and together these units were folded and regionally metamorphosed under greenschist to granulite facies conditions. The highest grade rocks lie to the west of the Halls Creek and Angelo Faults, and are referred to as the Tickalara Metamorphics.

Table 1. Early Proterozoic stratigraphy of the Lamboo Complex, East Kimberley

Unit	Major rock types	Thickness (m)	Comments
McIntosh Gabbro	Olivine gabbro, gabbro-norite, norite, troctolite, pyroxenite	300 - 7000	Intrudes Halls Creek Group and forms large basinal bodies, plugs, and fault-bounded blocks. Probably synchronous or slightly younger than the Bow River Granite
Bow River Granite	Porphyritic and equigranular granite, adamellite, granodiorite	-	Discordant plutons; intrudes Whitewater Volcanics
Whitewater Volcanics	Quartz-feldspar porphyry, rhyolitic to andesitic ashflow tuff, agglomerate	< 12 000	Intrudes or unconformable on Halls Creek Group
Mabel Downs Granodiorite	Granodiorite, tonalite	-	
Alice Downs Ultrabasics	Peridotite, chromitite, harzburgite, pyroxenite, gabbro, anorthosite	200 - 2000	Intrudes Halls Creek Group and forms folded sills and lopoliths
Tickalara Metamorphics	Schist, paragneiss, granulite, amphibolite, calc-silicates	-	Low- to high-grade equivalents of Halls Creek Group
Woodward Dolerite	Dykes and sills of uraltised dolerite	< 600	Folded and metamorphosed with Halls Creek Group
Halls Creek Group			
Undivided	Phyllitic siltstone, greywacke	< 6000	Tentatively correlated with Olympio Formation
Olympio Formation	Greywacke, siltstone, minor dolomite, felsic volcanics	> 4000	Turbidites; unconformably overlain by Whitewater Volcanics
Biscay Formation	Tholeiitic basalt, rhyodacitic tuffs, tuffaceous greywacke, siltstone, carbonate rocks	2000 - 3000	Pillow lavas
Saunders Creek Formation	Quartz sandstone, conglomerate	0 - 200	Depositional environments - braided stream and beach to shallow water
Ding Dong Downs Volcanics	Amygdaloidal basalt, tuff, felsic volcanics, phyllite	> 600	Bimodal volcanism; felsic rocks may be intrusive or extrusive

Modified after Plumb & others (1985) and Griffin & Grey (1990).

Layered mafic-ultramafic intrusions of the Alice Downs Ultrabasics (to be replaced by Alice Downs Ultramafics) were emplaced in the central part of the Lamboo Complex as sheet-like intrusions. These bodies were folded about northeast-trending axes and uplift took place along the major fault zones before the main phase of plutonic igneous activity in the Lamboo Complex took place. The felsic Whitewater Volcanics unconformably overlie the Tickalara Metamorphics, and both are intruded by granitic rocks of the Bow River Granite batholith. Layered mafic intrusions belonging to the McIntosh Gabbro were emplaced as areally large and thick basinal and funnel-shaped bodies that are probably synchronous or slightly younger than the Bow River Granite. A period of deformation involving ductile movement on northeast-trending faults, such as Halls Creek, Angelo, and Springvale faults, and associated uplift and erosion preceded the deposition of the Early Proterozoic Kimberley Basin succession and intrusion of the Hart Dolerite at ~1800 Ma.

Hancock & Rutland (1984) proposed a four-fold tectonic zone subdivision (*I to IV*) of the Halls Creek Orogen on the basis of structure, metamorphic grade, and Bouguer gravity trends, with some boundaries marked by major faults. The Halls Creek Group (zones *I*, *IIa*, and *IIc*) is intruded by syn-tectonic granitoids (*IIb*, e.g., Mabel Downs Granodiorite). Zones *IIa* and *IIc* are medium- and high-grade metamorphics (Tickalara Metamorphics) of the lower grade zone *I* Halls Creek Group. The post-tectonic Bow River Granite (*III*) and supracrustal Whitewater Volcanics (*IV*) flank the northwestern margin of the orogenic belt.

Griffin & Tyler (1992) defined three northeast-trending tectonic zones for the Halls Creek Orogen that are similar to the subdivisions of Hancock & Rutland (1984). Their *eastern zone* equates with low- to medium-grade Halls Creek Group (zone *I* of Hancock & Rutland), whereas their *central zone* (zones *I* and *II* of Hancock & Rutland) coincides with a regional gravity high and is characterised by the McIntosh Gabbro, Bow River Granite batholith, and low- to high-grade rocks of the Tickalara Metamorphics. Their *western zone* (zone *IV* of Hancock & Rutland) is dominated by the Whitewater Volcanics and low- to high-grade metasediments of the Marboo Formation.

Mineralisation is widespread and of various types in the East Kimberley (Fig. 3). With the exception of the Argyle diamond deposit there is no economically significant deposit currently being mined. The major mineralisation types that have been identified include epithermal gold, stratabound volcanogenic base-metal sulphides, volcanogenic rare-earth elements, magmatic Ni-Cu and Cr-PGEs in layered mafic-ultramafic intrusions, diamondiferous pipes of lamproitic and kimberlitic affinities, sedimentary-hosted uranium, and metapelite-hosted stratabound tungsten. The commodities which have attracted greatest exploration interest in the Dixon Range Sheet include Cu, Ni, PGEs, Cr, Zn, diamonds, whereas Au, Cu, Zn, U, rare-earth elements, and Pb have been the focus of exploration activities in the Gordon Downs Sheet.

The following summary of the major mineral deposits in the East Kimberley is in part from Dow & Gemuts (1969), Marston, (1979), De Havelland (1985, 1986), and Plumb (1990a).

GOLD

The gold potential of the Kimberley region was first highlighted in 1879 by the explorer Alexander Forrest. Philip Saunders, Adam Johns, and an aborigine named Crawford were the first prospectors to discover gold. Prospecting south of the Leopold Ranges they worked the Ord River and speckled gold

in quantity over a distance of 60 km. Unfortunately, weakened by illness, malnutrition, and the hostile environment, the prospectors could not thoroughly carry out their exploration and they left the region disillusioned. Upon returning to civilisation, Saunders sent a telegram to Forrest, now Surveyor General, advising him of their find. The telegram prompted Forrest to send out an expedition to be headed by the government geologist, E. T. Hardman. In recognition of his discovery, Saunders received a government pension of one pound ten shillings a week.

It was Hardman's report of 1885 that noted promising alluvial prospects over a large area of metamorphic rocks, that sent Charles Hall, a Roebourne well sinker and fencer, and his companion John Slattery, on their way to the first discovery of payable gold in the vicinity of Old Halls Creek. Early in 1885, Hall and Slattery staggered into Derby carrying with them 106 ounces of gold. By claiming the one thousand pounds government reward offered at that time for the finders of payable gold in Western Australia they started the Kimberley gold rush. This rush reached its peak in late 1886 when thousands of diggers arrived from the rest of Australia and New Zealand. In the ensuing years the rich auriferous gravels, which were thin and of limited extent, were rapidly worked out. When Woodward (1891) visited the field in 1890, very few alluvial mines were still operating, most of the gold had been traced to its source, and most fields had been discovered, developed, and abandoned. The small size of the reefs, remoteness of the area, lack of fuel and water, and in some cases the mineralogy of the ores, all contributed to the failure of the hard-rock mines. Most prospectors and mining companies had departed the East Kimberley in 1892 when major new finds were announced in the Coolgardie region of southern Western Australia.

Hardrock gold mining in the East Kimberley was restricted to four main areas: *Grants Patch*, *Ruby Creek-Mount Bradley-Brockman-Old Halls Creek*, *Mary River*, and *Mount Dockrell-Hangmans* areas. These four areas are located in the Dixon Range, Gordon Downs, and Mount Ramsay 1 : 250 000 sheet areas (Fig. 3). The Ruby Creek area was the most productive region of hardrock and alluvial gold (total production of 313.7 kg), followed by Mary River Goldfield (108.2 kg), Brockman area (103.1 kg), Mount Dockrell Goldfield (45.3 kg), Grants Patch area (41.6 kg), and Halls Creek area (21.3 kg). Total recorded gold production in the East Kimberley, up to 1963, was about 880 kg, most of it reef gold mined before 1900 (Table 2). The majority of the alluvial production was not recorded. Since 1988 minor gold production (total of 95.4 kg) has been largely restricted to small-scale workings (alluvial and eluvial) in the *Grants Creek-Grants Patch-Panton River* and *Mary River* areas (Fig. 3).

The fault-controlled quartz lode deposits are hosted by low-grade metasediments of the Halls Creek Group and are confined to a narrow stratigraphic zone between the Olympio and Biscay Formations, and adjacent to sills of Woodward Dolerite. The lodes generally consist of thin (< 2 m), steeply-dipping quartz veins that are often concordant with the bedding. Shale is the usual host, but lodes also occur in dolerite and sandstone. Most of the deposits have been worked only in the oxidised zone where the fine-grained gold occurs free. In the unoxidised zone the gold occurs with pyrite-galena-sphalerite-chalcopryrite mineralisation. Dow & Gemuts (1969) have summarised the geology of the East Kimberley gold mines, and individual mines are described by Finucane (1938a,b; 1939a,b) and Finucane & Sullivan (1939). De Havelland (1985, 1986) presents detailed accounts of the historical aspects of gold mining in the East Kimberley.

Jones (1938) has described minor gold operations in the *Mount Amherst* district (latitude 18°19'S and longitude 127°01'E in the Mount Ramsay 1 : 250 000 Sheet). The gold occurs in quartz reefs in granite, and in one case, in dolerite.

Table 2. Gold, tin, lead, and silver mine production data from the East Kimberley

GOLD											
Name of mine	Year	Alluvial gold (kg)	Dollied gold (kg)	Ore treated from lode (tonnes)	Lode gold (kg)	Name of mine	Year	Alluvial gold (kg)	Dollied gold (kg)	Ore treated from lode (tonnes)	Lode gold (kg)
Mary River Goldfield (total production = 108.2 kg)						Mount Dockrell Goldfield (total production = 45.3 kg)					
Reform	Before 1897			405	6.5	Lady Hopetown	Before 1897			41	10.0
Newlook	Before 1897	2.6	29.5			Victoria	Before 1897			4	3.5
PA99	1940-41			48	1.7	PA59	1935			37	0.8
PA151	1950		0.4			(?)	1935				0.8
Mary River	1988-90	67.5				Mount Miniard	1936-36			187	5.3
Halls Creek Area (total production = 21.3 kg)						Western Lead	1935-42			219	2.3
Jubilee	Before 1897			23	14.0	Irish Lass	1937-43	0.3	0.4	346	8.3
Lady Broome	Before 1897			406	0.9	Old Mac	1938-40			239	5.6
(?)	Before 1928			96	1.9	Erin-Go-Bragh	1939-41			62	1.7
PA84	1938-39			10	0.4	PA75	1938		0.6		
PA112	1941			9	0.5	PA102	1940			26	0.4
PA118	1942			10	0.5	PA101	1940-41			83	0.7
PA108	1942	0.9				(?)	1941			16	0.1
PA115	1943			82	1.6	Old Golden Dream	1941-42			93	0.8
PA158	1953			9	0.5	PA137	1949	0.6	0.3		
PA161	1953			3	0.1	Sundry claims	(?)			163	2.8
Brockman area (total production = 103.1 kg)						Ruby Creek area (total production = 313.7 kg)					
Afgan	Before 1897			96	2.1	North Ruby Queen	Before 1897			194	5.8
Brockman King	Before 1897			87	1.1	Rising Sun	Before 1897			586	15.2
Faugh-A-Ballagh	Before 1897			15	0.5	Sunny Corner	Before 1897			22	1.8
Golden Crown	Before 1897			1172	39.7	West and Left	Before 1897			690	29.4
Southern Cross	Before 1897			5	0.1	St Lawrence	Before 1902			383	2.8
Mount Bradley	Before 1928			2500	56.4	Ruby Queen (claim 61)	Before 1908			9833	192.7
Mount Bradley	1940-42			196	1.6	(?)	Before 1928			153	3.9
PA78	1938-39	0.2				PA79	1938			93	0.7
PA93	1939				0.1	St Lawrence	1938			10	0.2
PA97	1940		0.2	7	0.4	West and Left	1938-41			10	0.2
New Golden Crown	1963			122	0.7	Goliath	1938-42			123	3.2
Grants Patch area (total production = 41.6 kg)						PA91	1939				120.1
Lone Hand	(?)				8.1	PA93	1939		0.4		
Comet	Before 1897			29	4.6	PA96	1939			12	0.1
Star of Kimberley	Before 1897			1	0.1	(?)	1939		0.1		
Perseverance	Before 1897			5	0.1	Shorts Hope	1940			51	0.1
(?)	Before 1923			3	0.5	Goliath	1940			7	0.2
PA96	1940			3	0.1	Darcys mine	1941-42		0.5	79	1.9
PA162	1955		0.2			PA124	1947	0.4		8	0.2
Grants Creek-Panton River	1988	27.9				Ruby Queen (claim 97)	1897-1963		0.1	3120	53.7
Other returns (reported by banks and gold dealers up to 1963: total = 342.4 kg)											
		278.2	63.8	0.8	0.4						

Total recorded gold production for the East Kimberley for the periods 1884-1963 and 1988-1990 = 975.6 kg

TIN CONCENTRATES

Name of mine	Year	Quantity treated (tonnes)	Metallic content (units)	Value (A £s)
Mount Dockrell area (total recorded production = 86 units valued at £598.4)				
PA120	1943	0.61	40	143.0
Crown Lands	1951	0.17	12	116.9
Crown Lands	1952	0.06	4	42.6
Crown Lands	1962	0.47	30	295.9

LEAD CONCENTRATES

Name of mine	Year	Quantity treated (tonnes)	Lead (tonnes)	Value (A £s)
Mount Amherst (total recorded production = 6.34 tonnes valued at £647.6)				
PA127	1948-49	6.63	4.58	356.6
Crown Lands	1952	2.77	1.76	291.0

SILVER

Total production = 5.03 kg

Source of data: Finucane (1938a,b; 1939a,b), Finucane & Sullivan (1939), Dow & Gemuts, (1969), and Louthean (1991, 1992).

In 1989 the gold and base-metal potential of the *Wilsons*, *Lone Hand*, *Kimberley Lady*, *Comet*, *Perseverance*, *Moodys*, and *Star of Kimberley* prospects in the Grants Patch area (latitude 17°50'S and longitude 127°57'E in the Dixon Range 1 : 250 000 Sheet; Fig. 3) were evaluated by Southern Ventures NL and Swan Gold Mines Ltd (Louthean, 1991, 1992). The sub-vertical polymetallic quartz lodes are hosted by basalt, phyllite, and gabbro. The *Perseverance* and *Wilsons* lodes consist of en echelon, erratically mineralised vein systems within sheared metasediments. The total measured and indicated reserve is 66 000 t @ 4.97 g/t Au, 16.28 g/t Ag, 0.73% Pb, 0.25% Zn, and minor Cu. Reserves of individual deposits include: *Star of Kimberley* - measured 14 500 t @ 6.92 g/t Au, 38.8 g/t Ag, 1.8% Pb, 0.98% Zn, and 0.16% Cu; *Perseverance* - indicated 49 800 t @ 4.22 g/t Au, 10.4 g/t Ag, 0.44% Pb, and 0.05% Zn; *Wilsons* - indicated 2 500 t @ 8.59 g/t Au, 7.92 g/t Ag, 0.32% Pb, and 0.25% Zn.

Mineralisation at the *Mount Bradley* mine (latitude 18°21'S and longitude 127°50'E in the Gordon Downs 1 : 250 000 Sheet; Fig. 3) is associated with pyritic quartz veins in altered andesite interbedded with tuffaceous sediments and shales adjacent to the Ruby Queen Shear Zone (Louthean, 1991, 1992). Mineralisation is open at depth, down plunge to the south, and along strike to the north. Australian Coal and Gold Holdings Ltd have determined a measured resource of 1.4 Mt @ 3.1 g/t Au to an open pit depth of 70 m.

Dry Creek Mining NL in 1988 produced 27.9 kg of gold from an alluvial operation in the *Grants Creek-Panton River* area, 46 km northeast of Halls Creek (Louthean, 1991). About 97 848 cubic metres of alluvial and eluvial material was treated and the operation was planned to produce 150 kg/year from reserves of > 500 000 m³ containing up to 1 g/m³ Au. Ore reserves at three other prospects at *Grants Creek* include 48 000 t @ 5 g/t, 3700 t @ 25 g/t, and 9000 t @ 15 g/t Au.

In the late 1980s Roebuck Resources NL produced 67.5 kg of gold from alluvial operations at the *Mary River* deposit 32 km south-southwest of Halls Creek (Fig. 3; Louthean, 1991). About 323 000 t of alluvium was treated. The upper reaches of the Mary River and its tributaries drain part of the contact zone between the Olympio Formation and Biscay Formation.

Hunter Resources Limited in 1990 (Hunter Resources Ltd Quarterly Report to the Australian Stock Exchange for the period ending March 31 1990) reported a zone of quartz veining containing locally spectacular gold grades immediately to the north of the *Lamboo* PGE prospect (latitude 18°28'S and longitude 127°19'E in the Mount Ramsay 1 : 250 000 Sheet; Fig. 3). The quartz veins are up to 1 m wide and can be traced for over 1.5 km along strike in a structural zone 10 to 75 m wide. Grades of surface samples assay up to 126 g/t Au.

Money Mining NL and Troy Resources NL have investigated a number of gold prospects centred around and within 50 km of Halls Creek (Louthean, 1991). At *Nicholsons Find*, a 2 km long auriferous structure strikes north and dips east, and cuts across bedding and foliation of schistose Halls Creek Group quartz sericite sediments and coarser-grained quartz sericite rocks. These rocks have been described as mylonitised sericitised granophyric felsites of granitic composition. Drilling at the main *Nicholsons Find* structure and at *Burnt Out* returned gold intersections of 10 m @ 14.1 g/t and 5 m @ 5.5 g/t. Follow-up drilling reported 3 m @ 26.6 g/t, 4 m @ 18.8 g/t, and 7 m @ 19.84 g/t. Drilling at the *Shiftys Reef* prospect in the *Paddock Well-Lamboo* discovery returned best intersections of 2 m @ 8.3 g/t Au and 2 m @ 7.4 g/t Au.

Precious Metals Australia Limited (article by M. Smith in the Financial Review 27/09/93) announced significant gold intersections for the *Palm Springs* gold prospect, southeast of Halls Creek. The first

two holes, designed to test the southern extensions of the *Butchers Creek* deposit to a depth of 100 m, intercepted 19 m @ 8.95 g/t Au from a depth of 78 m and 7 m @ 3.56 g/t Au from a depth of 47 m. Further drilling is planned to firm up the resource figures, previously estimated as an indicated resource of 1.1 Mt @ ~ 3.3 g/t Au.

DIAMONDS

Diamondiferous lamproitic pipes and associated alluvial deposits occur in the northeastern part of the Lamboo Complex and in the Kimberley Basin. Deeply penetrating fracture systems localised in the Halls Creek Orogen were probably important in channeling lamproitic magma to the near-surface environment. Economically the most significant is the world class *Argyle (AK1)* pipe (latitude 16°42'S and longitude 128°23'E in the Lissadell 1: 250 000 Sheet; Fig. 3). The *Argyle* pipe which intruded Early Proterozoic sediments at 1178 Ma, is a steep-sided diatreme about 2 km long, 150 to 500 m wide, and has a surface area of about 50 ha. It is largely infilled with lapilli ash tuffs of predominate mudflow origin. The quality of diamonds is estimated at 4.6% gem, 40.8% cheap gems, and 54.6% industrial stones and grit. Production in 1992 was 36.6 million carats of diamond from *AK1* ore and 2.4 million carats from alluvial ore. As of December 1992, the *Argyle (AK1)* pipe had a proven and probable reserve of 90 Mt @ 3.56 carats/t; a measured and indicated resource of 180 Mt @ 3.6 carats/t. The alluvials had a proven and probable reserve of 22 Mt @ 0.71 carats/t; a measured and indicated resource of 41 Mt @ 0.52 carats/t; and an inferred resource of 11 Mt @ 0.36 carats/t (Wilkinson, 1992, 1993). The geological, petrological, and geochemical features of the *Argyle* pipe and other kimberlitic pipes/dykes from the Kimberleys are described in detail by Atkinson & others (1984a,b; 1990), Jaques & others (1986; 1989a,b,c), Boxer & others (1986, 1989), Boxer & Jaques (1990), and Lewis (1990a,b).

The *Lissadell Road* dyke, 10 km west of *Argyle*, is a discontinuous set of small lamproite stringers 2.5 km long and up to 1 m thick (Atkinson & others, 1990). At surface the dykes, which consist of highly weathered, altered micaceous lamproite, are commonly associated with vein quartz. About 6.4 metric carats of diamonds, similar in appearance and quality to the *Argyle* stones, have been recovered from the dyke. The grade is high, but the small volume of the lamproite dyke renders the deposit uneconomic.

Five small kimberlitic dykes which intrude the eastern edge of the Kimberley Basin and two small kimberlite pipes and four kimberlite dykes in the North Kimberley have no economic potential (Atkinson & others, 1990). With the exception of the *Pteropus* pipe (one diamond recovered) and the *Maude Creek* dyke (six diamonds), the bodies are barren of diamond.

Buried diamondiferous gravels derived from the *Argyle (AK1)* pipe are being mined at the *Bow River* deposit, 40 km northeast of the *Argyle (AK1)* pipe (Wilkinson, 1992, 1993). Reserves have been calculated for five mineralised gravel horizons that are covered by sand, silt, gravel, and black soil deposits up to 5.5 m thick. In 1991/92, 3 777 443 t of ore were treated at 0.27 carats/t to produce 1 092 831 carats of diamond. As of June 1992, the *Bow River* alluvials have a proven and probable reserve of 6.4 Mt @ 0.27 carats/t.

Striker Resources NL has reported that the *Beta Creek-King George River* catchment about 220 km northwest of Kununurra has yielded over 300 diamonds from unknown multiple sources (Wilkinson, 1993).

Terrex Resources NL has defined a major gravel-bearing palaeo-drainage channel (proto-Ord River) that contains 20 to 30 m of unconsolidated alluvial sands, silts, and tidal muds at *Sorby Loop*, 50 km north of Kununurra. A 9-hole drilling program in late-1988 recorded thick gravel sequences in most holes between 20 to 40 m and a small broken diamond was recovered (Wilkinson, 1993).

Triad Minerals NL has documented kimberlitic indicator minerals and microdiamonds from the *Salmond* prospect, about 150 km north of Halls Creek (Wilkinson, 1993), and trenching over a kimberlite dyke at the *Sandy Gorge* prospect, 50 km northwest of Halls Creek, recovered a small diamond (Wilkinson, 1992).

Cambridge Gulf Exploration NL own a series of offshore tenements comprising about 35 000 km² in the *Joseph Bonaparte Gulf*, about 25 km from the mouth of the Ord River (Louthean, 1992; Wilkinson, 1993). Diamondiferous gravels washed down the Ord River and other drainage systems of the Kimberley Craton also contain gold, chromite, copper, zinc, and palladium. Assessment of seismic data from a 1991 survey indicated that there could be 1 145.7 billion bank cubic metres (bcm) of gravels and 2 246.3 billion bcm of overburden. The gravels lie in about 60 m of water. Subject to favourable exploration results, dredging operations for the diamonds are planned to commence late 1993.

COPPER, LEAD, AND ZINC

Polymetallic volcanogenic base-metal sulphide concentrations are widespread in low grade metasedimentary-volcanic sequences along a well defined northeast-trending belt centred near Halls Creek in the Gordon Downs 1 : 250 000 Sheet (Fig. 3). The subeconomic deposits contain varying amounts of copper-lead-zinc sulphides with associated silver and gold. Disseminated and minor massive primary sulphides (dominantly chalcopyrite-sphalerite-pyrite-pyrrhotite-galena) form small, deformed pod-like and strongly attenuated bodies with localised pockets of high-grade supergene Ag-Au-Cu mineralisation in the oxidised zone. The deposits are hosted by mixed volcanic-carbonate-pelite-arenite sequences of mostly shallow-water origin, from near the boundary of the Biscay and Olympio formations. Griffin & Tyler (1992) have defined these rocks as a part of the Koongie Park Member of the Tickalara Metamorphics. This unit contains felsic volcanics, volcanoclastics, flow-banded rhyolite, spherulitic lava, and banded iron formation that cannot be readily correlated with sequences in the Halls Creek Group. The deposits are believed to range from proximal disseminated copper mineralisation in subvolcanic intrusives, to more distal volcanic and sedimentary-hosted copper-lead-zinc-arsenic-silver-gold deposits.

The base-metal prospects southwest of Halls Creek (*Golf Course*, *Rock Hole*, *Gosford*, *Onedin*, *Puseye*, *Atlantis*, *Earth Dam*, *Sandiego*, *Hanging Tree*, *Mount Angelo*; many of these prospects are collectively shown as the Koongie Park prospect on Fig. 3) are generally copper-zinc and copper-rich and are hosted by chloritic phyllite, banded iron formation, chert, calc-silicate, and felsic tuffs and lavas. *Sandiego's* secondary supergene resource has been estimated at 335 000 t @ 6.7% Cu and 288 g/t Ag, while the primary sulphide resource contains 4.3 Mt @ 0.51% Cu, 7.9% Zn, and 31/t Ag (Louthean & Meiklejohn, 1991). Total and inferred reserves at *Mount Angelo* are 500 000 t @ 2% Cu and, at the adjacent *Mount Angelo South* deposit, disseminated sulphides in a porphyritic felsic subvolcanic intrusive or tuff amount to an inferred resource of 21 Mt @ 0.44% Cu. The *Ilmars* (latitude 18°04'S and longitude 127°52'E in the Gordon Downs 1 : 250 000 Sheet; Fig. 3) and *Little Mount Isa* (latitude 18°05'S and longitude 127°51'E in the Gordon Downs 1 : 250 000 Sheet) prospects situated

respectively 25 and 28 km northeast of Halls Creek in the Gordon Downs 1: 250 000 Sheet are zinc-rich deposits hosted by calc-silicate and carbonaceous rocks. Drilling below gossans has defined grades of 1 to 2% Zn, < 1% Cu, and 0.1% Pb. Gold mineralisation has also been delineated at the *Little Mount Isa-Duffer* prospect by Shell-Billiton (article by M. Smith in the Financial Review 30/09/92, p. 22).

The Bungle Bungle Dolomite in the Osmond Range in the Dixon Range Sheet contains stratiform lead mineralisation with up to 3% Pb over a strike length of 8 km (Thompson, 1973; McIntyre & others, 1980-1984). At the basal contact of the Bungle Bungle Dolomite with the Mount Parker Sandstone, stratiform copper mineralisation with values up to 1% Cu are found over a similar strike length (McIntyre & others, 1980-1984).

Localised occurrences of subeconomic secondary copper mineralisation (malachite, azurite, chalcocite, covellite, cuprite, native copper) and disseminated chalcopyrite \pm galena are widespread throughout the East Kimberley (Dow & Gemuts, 1969; Marston, 1979). The mineralisation occurs in veins, shears, vugs, and vesicles in a variety of host rocks that include sediments and volcanics of the Halls Creek Group (in particular carbonate units of the Biscay Formation and basalt of the Ding Dong Downs Volcanics), mafic and ultramafic intrusives of the McIntosh Gabbro and Alice Downs Ultrabasics, granite and pegmatite veins of the Bow River Granite, felsic volcanics of the Whitewater Volcanics, mafic volcanics of the Carson Volcanics, dolerite and granophyre of the Hart Dolerite, basalts of the Early Cambrian Antrim Plateau Volcanics, and carbonate beds in the Middle Cambrian Headleys Limestone Formation. Malachite is also widespread on bedding planes of fine-grained sediments within the Teronis Member of the Elgee Siltstone and in the Pentecost Sandstone, both in the Kimberley Basin.

Gemuts & Smith (1968), Dow & Gemuts (1967, 1969), and Marston (1979, pp. 41-50) have described many minor occurrences of secondary copper in the Dixon Range and Gordon Downs 1: 250 000 sheets (most of these are listed in indexes A₁ and B₁ of this record). Copper prospects from the Dixon Range 1: 250 000 Sheet include cupriferous veins and shears in the Olympio Formation at *Osmond Creek* (latitude 17°14'S and longitude 128°19'E) and *Frank River* (latitude 17°27'S and longitude 128°11'E), and copper in ?dolomite of the Biscay Formation at *Mount Coghlan* (latitude 17°59'S and longitude 128°57'E). Cupriferous shears in Tickalara Metamorphics occur at *Mabel Downs East* (latitude 17°13'S and longitude 128°13'E), *Froghollow Spring* (latitude 17°16'S and longitude 128°03'E), *Tickalara Bore* (latitude 17°22'S and longitude 128°00'E), and in hornblende granite at *McHales* copper show (latitude 17°05'S and longitude 128°17'E). Quartz-copper carbonate veins occur in dolerite at *Roses Bore* (latitude 17°41'S and longitude 127°51'E) and near *Fourteen Mile Bore* (latitude 17°41'S and longitude 127°58'E). Copper prospects from the Gordon Downs 1: 250 000 Sheet include vein quartz containing chalcocite, cuprite, and malachite in sheared Olympio Formation at *Mount Kinahan* (latitude 18°08'S and longitude 128°03'E) and in slates of the Biscay Formation north of the *Saunders Creek* uranium prospects (latitude 18°03'S and longitude 128°58'E). At the *Bulman Waterhole* (latitude 18°06'S and longitude 127°58'E) native copper occurs in quartz and calcite amygdaloids in metabasalt of the Ding Dong Downs Volcanics near the contact with the Saunders Creek Formation.

Blockley (1971) described two small lead-silver deposits near *Mount Amherst* station (at latitude 18°23'S, longitude 126°59'E and latitude 18°18'S, longitude 126°55'E in the Mount Ramsay 1: 250 000 Sheet). The deposits consist of a number of galena- and cerussite-bearing quartz-carbonate veins in faults traversing metasediments of the Halls Creek Group, and granites. About 6 t of lead and

5 kg of silver were produced (Table 2). Minor amounts of lead and silver are associated with the *Mount Dockrell* gold reefs in the Mount Ramsay 1 : 250 000 Sheet (Woodward, 1891; Finucane, 1938b).

RARE-EARTH ELEMENTS

Stratabound volcanogenic rare-earth element mineralisation is located at the *Brockman* deposit 18 km southeast of Halls Creek (latitude 18°19'S and longitude 127°47'E in the Gordon Downs 1: 250 000 Sheet, Fig. 3). Drilling has defined a measured resource of 4.29 Mt @ 0.44% Nb₂O₅, 0.027% Ta₂O₅, 0.124% Y₂O₃, 1.04% ZrO₂, 0.011% Ga, 0.035% HfO₂, and 0.09% combined rare-earth oxides. The indicated and inferred resources at these grades total 45 Mt (Chalmers, 1990). The major host to the mineralisation is a trachytic ash flow tuff (informally called 'niobium tuff') that varies in width from 5 to 35 m and can be traced along strike for 3.5 km. Associated rocks include trachytic flows, agglomerates, subvolcanic intrusives and lahars. The mineralisation is believed to have formed from extreme enrichment of a niobium tuff bed during deuteric alteration of an unusual suite of highly fractionated, A-type felsic lavas, tuffs, and subvolcanic intrusives. The mineralised volcanic rocks are part of a new stratigraphic unit to be named the Butchers Gully Member (Griffin & Tyler, 1992). Recent structural and stratigraphic mapping by GSWA indicates that the Butchers Gully Member occurs within the basal part of the Olympio Formation and not in the underlying Biscay Formation as previously thought.

NICKEL-COPPER AND CHROMIUM-PLATINUM-GROUP ELEMENTS

Layered mafic-ultramafic intrusions throughout the Lamboo Complex have created considerable exploration interest in regard to their nickel-copper and chromium-PGE potential (Barnes & others, 1991; Hoatson, 1993; Hoatson & Tyler, 1993). Subeconomic concentrations of Ni-Cu sulphides have been defined near the basal contacts of McIntosh Gabbro intrusions that were emplaced into the high-grade terranes after granulite-facies metamorphism, e.g., *Sally Malay*, *Corkwood*, *Bow River* (all on Fig. 3), *Keller Creek* (latitude 17°19'S and longitude 127°58'E in the Dixon Range 1: 250 000 Sheet), and *Salt Lick Creek* intrusions (latitude 18°04'S and longitude 127°52'E in the Lissadell 1: 250 000 Sheet) or along narrow rifts in the Bow River Granite batholith, e.g., *Margaret River*, *Sandy Creek* (both on Fig. 3) and *Billymac Yard* intrusions (latitude 17°39'S and longitude 127°43'E in the Dixon Range 1: 250 000 Sheet).

The *Sally Malay* mafic intrusion (Thornett, 1981; Hoatson, 1993) contains the largest known resource of nickel in the East Kimberley. It was discovered by Australian Anglo American Limited in 1974 during a stream sediment-gossan search program. This composite intrusion consists of four small lobe-shaped mafic-ultramafic and mafic bodies that represent interconnected sub-chambers that had different crystallisation histories. The intrusion, which covers a total area of ~ 4 km², was emplaced into granulite-facies migmatites and metagabbro sills, and in turn, it was intruded by irregular bodies of fine-grained norite. Major rock types include gabbro, norite, gabbro-norite, harzburgite, olivine clinopyroxenite, troctolite, and peridotite. Massive, brecciated, and minor disseminated nickeliferous pyrrhotite-pentlandite-chalcopyrite are hosted by a chilled marginal norite below an overlying peridotite unit. The deposit is currently estimated to contain 5.1 Mt @ 1.7% Ni, 0.7% Cu, and 0.1% Co, of which 3 Mt in an upper lens is categorised as an indicated resource, and the balance, mainly

located in a lower lens, is categorised as inferred. Preliminary evaluations indicate that the deposit is presently subeconomic and the project is dormant (Louthan & Meiklejohn, 1991; Normandy Poseidon Limited 1993 Annual Report).

Drilling in the mafic *Corkwood* intrusion (Nevill, 1974; Marston, 1984; Wilding, 1980) has demonstrated grades of 0.1 to 0.5% Cu, 0.3 to 2.6% Ni, and 0.02 to 0.1% Co over 1.5 to 4 m, and at *Bow River*, 0.15% Ni and 0.2% Cu over 64 m. Anomalous Ni-Cu contents have been defined in stream and rock-chip geochemical programs at the *Spring Creek* (~ 14 km southwest of *Sally Malay*), *Keller Creek*, *Salt Lick Creek*, *Sandy Creek*, and *Billymac Yard* intrusions.

Layered mafic-ultramafic intrusions of the Alice Downs Ultrabasics (*Panton*, *Eastman*, *Lambo*; all on Fig. 3) contain significant, but subeconomic resources of Cr-PGEs-Ni-Cu-Au. The *Panton* intrusion is the most extensively explored body with sulphide-bearing chromitite layers containing an indicated and inferred resource of 2 Mt @ 6.02 g/t Pt+Pd+Au, 0.28% Ni (Perring & Vogt, 1991a,b). Covering a total area of 3 by 12 km, the *Panton* intrusion forms a southwest-plunging syncline comprising a lower 650 m-thick ultramafic series and overlying 900 m-thick mafic series (Hoatson & Tyler, 1993). The economically significant 0.1 to 1.2 m-thick PGE-enriched chromitite layers occur in the upper part of the ultramafic series and can be traced for at least 12 km along strike. The southwestern end of the intrusion has been truncated by the north-northwest-trending *Panton Fault*. Fault-bounded ultramafic blocks containing chromitite layers along this major sinistral fault may represent tectonic fragments of the *Panton* intrusion (Hoatson, 1993).

The *Eastmans Bore-Louisa Downs* ultramafic-mafic intrusion (Hoatson & Glaser, 1989) is a steeply-dipping folded sill consisting of peridotite, pyroxenite, anorthosite, norite, and gabbro. The ultramafic-mafic sequence is about 950-m thick. Chromitite layers hosted by peridotite are up to 0.1 to 0.5 m thick and locally have high PGE concentrations of up to 7.5 g/t (Helix Resources NL 1986 Prospectus). The chromitites show marked lateral variation, with layers bifurcating and converging over short distances. Cross-cutting faults which displace the chromitites by up to 1.2 km, have divided the intrusion into separate blocks.

The *Lambo* ultramafic-mafic intrusion (Barnes & others, 1991) is an oval-shaped body comprising a lower 1500 m-thick ultramafic series of serpentinised peridotite, and an upper 1000 m-thick mafic series of anorthosite and gabbro. Hunter Resources Limited (Quarterly Report to the Australian Stock Exchange for the period ending 25 October 1988) reported broad zones of low grade (0.6 g/t Pt+Pd) mineralisation associated with narrow (< 15 cm) chromitite layers in the upper 300 m of the ultramafic series and localised higher grade layers of 4.5 m @ 2.5 g/t Pt+Pd+Au. The mineralisation consists of disseminated to massive chromite with trace amounts of chalcopyrite, pyrrhotite, pyrite, and pentlandite. Previous operators, West Coast Holdings Ltd, defined a sulphide-bearing horizon 1.5 km long in the *Lambo* Complex and estimated probable ore reserves of 4.7 Mt @ 4.5% Zn with minor Co and Ag (Louthan, 1991).

Low grade (< 0.5 g/t PGEs) mineralisation is associated with disseminated chromite and locally thin massive chromitite layers in troctolite and anorthositic gabbro in the *Toby* (chromite at latitude 17°36'S and longitude 127°41'E in the Dixon Range 1: 250 000 Sheet) and *Springvale* (chromite at latitude 17°46'S and longitude 127°37'E in the Dixon Range 1: 250 000 Sheet) mafic intrusions, 30 km northwest and 22 km west, respectively, of the *Panton* intrusion. The *Melon Patch* (chromite at latitude 17°38'S and longitude 127°57'E in the Dixon Range 1: 250 000 Sheet) group of ultramafic-mafic

intrusions (Hoatson & Tyler, 1993), 20 km northeast of the *Panton* intrusion, hosts narrow discontinuous PGE-bearing chromitites in the upper parts of the ultramafic stratigraphy.

TIN AND TUNGSTEN

Pegmatite veins in the *Columbium Creek* area (latitude 18°55'S and longitude 127°14'E in the Mount Ramsay 1 : 250 000 Sheet) near *Mount Dockrell* (Fig. 3) contain cassiterite, manganocolumbite, and tantalite with associated albite, muscovite, tourmaline, and minor spessartite. Where the pegmatites intrude carbonate units the veins also may contain small amounts of fluorite and apatite. The pegmatites form irregular, tabular, and thin reef-like bodies, and some include large blocks of country rock. They range up to 150 m long and are 3 to 70 m thick. Alluvial deposits related to the pegmatites were intermittently worked during 1943 to 1962, but production was only 86.3 units of tin metal (Table 2). The geology of the Mount Dockrell pegmatites is described by Finucane (1938c).

Roebuck Resources NL has investigated several old tantalum-niobium-tin prospects associated with tourmaline-rich quartzites and mafic volcanics with altered granitic rocks and pegmatite in the *Columbium Creek* area. Roebuck noted that stratabound and skarn-type mineralisation, sometimes anomalous in Au, Cu, Pb, and Mo, have been located and substantial volumes of tin-tantalum-bearing alluvials of unknown grade occur in and along *Columbium Creek* and its tributaries (Louthan, 1991).

Stratabound scheelite occurs in a mixed volcanic-sedimentary sequence of the Biscay Formation in the Castle Creek Anticline, 35 km east-northeast of Halls Creek in the Gordon Downs 1 : 250 000 Sheet (Ririe, 1989, 1990). Mineralisation is in discontinuous lenses, up to several percent WO₃ in quartzite, but the best drill intercept contains only 2.5 m @ 0.96% WO₃. The host sequence comprises pelite, arenite, volcanoclastics, and carbonates, and the mineralised quartzite contains pseudomorphs after gypsum and possibly anhydrite. Ririe (1989) proposed a syngenetic volcanic-exhalative origin for the mineralisation in a continental sabkha basin environment, but Trudu (1990) postulated an intrusion-related hydrothermal model where W-bearing fluids were derived from nearby granite.

GEOPHYSICAL SURVEYS

Aeromagnetic-gamma-ray spectrometric, aeromagnetic-electromagnetic, and aeromagnetic surveys carried out by companies for the period 1969-1985 are concentrated in the western half of the Dixon Range 1 : 250 000 Sheet (Fig. 4) and the northwestern corner of the Gordon Downs 1 : 250 000 Sheet (Fig. 5). Line spacing for the surveys ranged from 100 to 1600 m. No surveys have been carried out on the Canning and Ord Plains that cover most of the southeastern part of the two sheets. The specifications of surveys carried out on the Dixon Range and Gordon Downs 1 : 250 000 sheet areas are summarised in Tables 3 and 4, respectively.

Aerodata Holdings Limited carried out and processed an aeromagnetic and gamma-ray spectrometric (potassium, thorium, and uranium) survey for AGSO in 1992. The survey encompassed all of the Dixon Range and the northern half of the Gordon Downs 1 : 250 000 sheets. Line spacing and line direction was 400 m and 090-270°, respectively, and the sensor height was 100 m. This data in hard copy pixel maps and digital disc-tape formats will be available for purchase from AGSO (Publications Sales,

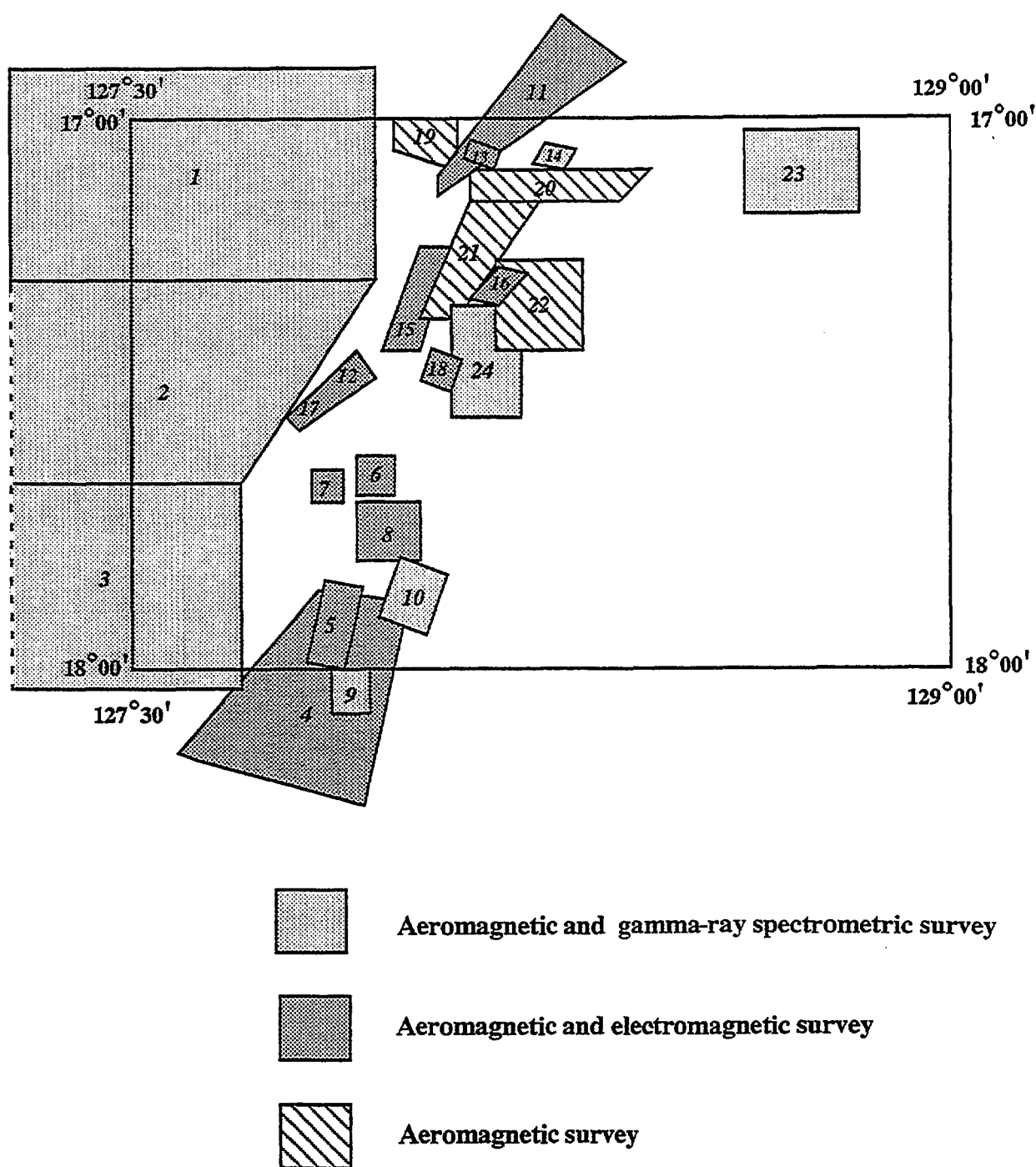


Figure 4. Distribution of company geophysical surveys in the Dixon Range 1 : 250 000 Sheet. Areas of surveys shown are approximate only. Details of the surveyed areas (including longitude and latitude co-ordinates are given in Table 3. Data from MAGCAT Database - Geophysics section of the Geological Survey of Western Australia.

AGSO, GPO Box 378, Canberra ACT, 2601, fax: 06 2499982) from February 1995 and February 1997, respectively.

Gravity data for the Dixon Range and Gordon Downs 1 : 250 000 sheets are encompassed in the 1990/1991 AGSO 1 : 1 000 000 Halls Creek Sheet (E52), which is available in contoured hardcopy (\$25), film (\$75), and digital disc (\$350) formats from AGSO (address above).

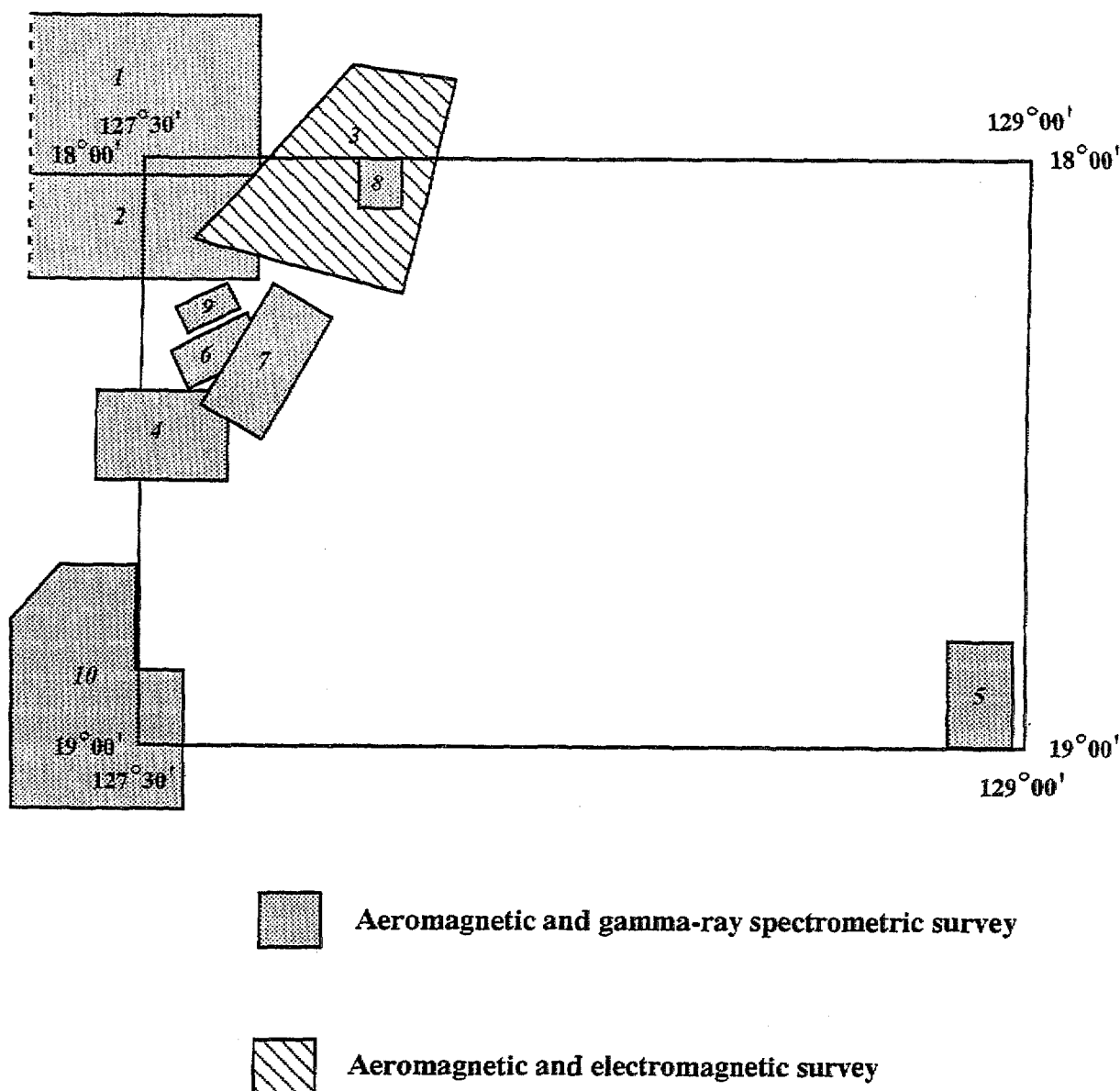


Figure 5. Distribution of company geophysical surveys in the Gordon Downs 1 : 250 000 Sheet. Areas of surveys shown are approximate only. Details of the surveyed areas (including longitude and latitude co-ordinates) are given in Table 4. Data from MAGCAT Database - Geophysics section of the Geological Survey of Western Australia.

GEOCHRONOLOGY

Geochronological data for various Precambrian rock types from the Kimberley region are summarised in Table 5. Some of the ages in this table are contained in the database OZCHRON (Page & others, 1993). OZCHRON is the geochronological data storage and retrieval system of the Minerals and Land Use Program of AGSO (contact Rod Page: ph 06 2494261, or write to Publications Sales, AGSO, GPO Box 378, Canberra ACT, 2601, fax: 06 2499982). It is implemented under Oracle's relational database management system running under the UNIX operating system on a DG AViiON computer. OZCHRON is a relational database that uses many tables in common with other AGSO databases (e.g.,

Table 3. Details of geophysical surveys carried out by companies in the Dixon Range 1 : 250 000 Sheet. Source of data - MAGCAT database (1990) from the Geological Survey of Western Australia

Survey shown on Figure 4	Type of survey	Year of survey	Line spacing (m)	Altitude	Company	Contractor	Co-ordinates of survey		
1	Mag-Spec	1969	1600	120	Tenneco	Hunting	Lats (16.92, 16.92, 17.30, 17.30)	&	Longs (127.23, 127.95, 127.95, 127.23)
2	Mag-Spec	1969	1600	120	Tenneco	Hunting	Lats (17.30, 17.30, 17.66, 17.66)	&	Longs (125.87, 127.95, 127.70, 126.64)
3	Mag-Spec	1969	1600	120	Tenneco	Hunting	Lats (17.66, 17.66, 18.03, 18.03)	&	Longs (125.97, 127.70, 127.70, 125.97)
4	Mag-Elec	1973	500	-	Anglo American	Geoterrex	Lats (17.83, 17.88, 18.23, 18.13)	&	Longs (127.87, 128.03, 127.93, 127.58)
5	Mag-Elec	1973	500	-	Anglo American	Geoterrex	Lats (17.81, 17.83, 17.98, 17.97)	&	Longs (127.88, 127.93, 127.90, 127.83)
6	Mag-Elec	1979	-	-	Anglo American	Dighem	Lats (17.60, 17.60, 17.67, 17.67)	&	Longs (127.92, 127.97, 127.97, 127.92)
7	Mag-Elec	1979	-	-	Anglo American	Dighem	Lats (17.63, 17.63, 17.68, 17.68)	&	Longs (127.83, 127.87, 127.87, 127.83)
8	Mag-Elec	1979	-	-	Anglo American	Dighem	Lats (17.68, 17.68, 17.78, 17.78)	&	Longs (127.92, 128.02, 128.02, 127.92)
9	Mag-Spec	1980	125	-	Mobil	Scintrex	Lats (18.00, 18.00, 18.07, 18.07)	&	Longs (127.89, 127.95, 127.95, 127.89)
10	Mag-Spec	1980	250	90	Mobil	Scintrex	Lats (17.80, 17.83, 17.93, 17.90)	&	Longs (128.01, 128.08, 128.05, 127.97)
11	Mag-Elec	1980	-	-	Anglo American	Geoterrex	Lats (16.83, 16.90, 17.13, 17.05)	&	Longs (128.32, 128.43, 128.08, 128.11)
12	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.40, 17.45, 17.53, 17.51)	&	Longs (127.93, 127.95, 127.78, 127.77)
13	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.03, 17.05, 17.08, 17.06)	&	Longs (128.14, 128.21, 128.20, 128.13)
14	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.03, 17.04, 17.07, 17.06)	&	Longs (128.28, 128.30, 128.29, 128.25)
15	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.22, 17.22, 17.42, 17.42)	&	Longs (128.04, 128.10, 128.03, 127.97)
16	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.26, 17.28, 17.34, 17.32)	&	Longs (128.18, 128.23, 128.19, 128.14)
17	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.40, 17.45, 17.53, 17.51)	&	Longs (127.93, 127.93, 127.78, 127.77)
18	Mag-Elec	1979	100	-	Anglo American	Dighem	Lats (17.42, 17.45, 17.49, 17.47)	&	Longs (128.08, 128.12, 128.10, 128.04)
19	Mag	1980	250	-	Stockdale	Geoterrex	Lats (17.00, 17.00, 17.08, 17.05)	&	Longs (128.00, 128.11, 128.11, 128.00)
20	Mag	1980	250	-	Stockdale	Geoterrex	Lats (17.08, 17.08, 17.15, 17.15)	&	Longs (128.13, 128.48, 128.43, 128.13)
21	Mag	1980	250	-	Stockdale	Geoterrex	Lats (17.15, 17.15, 17.35, 17.37)	&	Longs (128.13, 128.25, 128.11, 128.05)
22	Mag	1980	250	-	Stockdale	Geoterrex	Lats (17.25, 17.25, 17.41, 17.41)	&	Longs (128.18, 128.33, 128.33, 128.18)
23	Mag-Spec	1981	250	-	BHP	Aerodata	Lats (17.02, 17.02, 17.17, 17.17)	&	Longs (128.66, 128.87, 128.87, 128.66)
24	Mag-Spec	1981	250	-	BHP	Aerodata	Lats (17.33, 17.33, 17.54, 17.54)	&	Longs (128.10, 128.22, 128.22, 128.10)

Mag-Spec = Aeromagnetics and gamma-ray spectrometrics; Mag-Elec = Aeromagnetics and electromagnetics; Mag = Aeromagnetics; - = unknown

Table 4. Details of geophysical surveys carried out by companies in the Gordon Downs 1 : 250 000 Sheet. Source of data - MAGCAT database (1990) from the Geological Survey of Western Australia

Survey shown on Figure 5	Type of survey	Year of survey	Line spacing (m)	Altitude	Company	Contractor	Co-ordinates of survey		
1	Mag-Spec	1969	1600	120	Tenneco	Hunting	Lats (17.66, 17.66, 18.03, 18.03)	&	Longs (125.97, 127.70, 127.70, 125.97)
2	Mag-Spec	1969	1600	120	Tenneco	Hunting	Lats (18.03, 18.03, 18.20, 18.24)	&	Longs (126.27), 127.70, 127.70, 126.27
3	Mag-Elec	1973	500	-	Anglo American	Geoterrex	Lats (17.83, 17.88, 18.23, 18.13)	&	Longs (127.87, 128.03, 127.93, 127.58)
4	Mag-Spec	1978	200	90	Aquitaine	Geoterrex	Lats (18.40, 18.40, 18.55, 18.55)	&	Longs (127.42, 127.65, 127.65, 127.42)
5	Mag-Spec	1978		-	Uranex	Geometrics	Lats (18.83, 18.83, 19.01, 19.01)	&	Longs (128.88, 128.97, 128.97, 128.88)
6	Mag-Spec	1979 &	250	90	Mobil	-	Lats (18.33, 18.26, 18.32, 18.39)	&	Longs (127.57, 127.68, 127.72, 127.61)
7	Mag-Spec	1979	250	90	Mobil	Geometrics & Scintrex	Lats (18.25, 18.30, 18.50, 18.45)	&	Longs (127.75, 127.83, 127.74, 127.63)
8	Mag-Spec	1980	125	30	Mobil	Geometrics	Lats (18.00, 18.00, 18.07, 18.07)	&	Longs (127.89, 127.95, 127.95, 127.89)
9	Mag-Spec	1984	100	70	Minplex	Aerodata	Lats (18.25, 18.20, 18.23, 18.29)	&	Longs (127.58, 127.67, 127.69, 127.60)
10	Mag-Spec	1985	300	90	PNC Explor	Aerodata	Lats (18.71, 18.71, 18.88, 18.88)	&	Longs (127.38, 127.50, 127.50, 127.79)
							Lats (18.88, 18.88, 19.00, 19.00)	&	Longs (127.25, 127.58, 127.58, 127.25)
							Lats (18.87, 19.13, 19.13, 18.87)	&	Longs (127.25, 127.25, 127.58, 127.58)

Mag-Spec = Aeromagnetics and gamma-ray spectrometrics; Mag-Elec = Aeromagnetics and electromagnetics; Mag = Aeromagnetics; - = unknown

Table 5. Summary of Precambrian geochronological data for the Kimberley region

Formation	Age (Ma)	Analytical method	Location 1 : 100 000 Sheet AMG grid/ Long-Lats	Reference
Shrimp U-Pb zircon				
Pegmatite of Bofinger (1967)	1740	Shrimp U-Pb zircon	Dockrell 140 068	Page, unpublished data
Olympio/Biscay (Brockman Niobium Tuff)	1870 ± 4	Shrimp U-Pb zircon	Halls Creek ~18°19'S, 127°47'E	Taylor & others (in press)
Olympio/Biscay (Brockman Niobium Tuff)	2280 - 2930 inherited, xenocrystic zircons	Shrimp U-Pb zircon	Halls Creek ~18°19'S, 127°47'E	Taylor & others (in press)
Saunders Creek	2400 - 3600 inherited, detrital zircons	Shrimp U-Pb zircon	Halls Creek 912 017	R. W. Page, (pers. comm 1993)
Sophie Downs Granite	1900 - 1920	Shrimp U-Pb zircon	Halls Creek 784 955	R. W. Page (pers. comm 1993)
Ding Dong Downs (volcanics)	1900 - 1920	Shrimp U-Pb zircon	Halls Creek 905 003	R. W. Page (pers. comm 1993)
Conventional U-Pb zircon				
Hart Dolerite (granophyre)	1800	Conventional U-Pb zircon	Richenda 323 079	Page, unpublished data
Whitewater Volcanics	1850 ± 5	Conventional U-Pb zircon	Dunham River DG129 792	Page & Hancock (1988)
Tickalara Metamorphics (granitic vein in migmatite)	1854 ± 6	Conventional U-Pb zircon	Turkey Creek DG148 165	Page & Hancock (1988)
Biscay (felsic tuff)	1856 1881	²⁰⁷ Pb/ ²⁰⁶ Pb conventional U-Pb zircon	Halls Creek Bertha's Butt Prospect	Ririe (1984)
?Biscay (intrusive rhyolitic sill)	1856 ± 5	Conventional U-Pb zircon	Halls Creek CF861 079	Page & Hancock (1988)
Rb-Sr whole-rock & mineral				
Hart Dolerite (granophyre)	1762 ± 25	Rb-Sr whole-rock & mineral isochron	Various in the West & East Kimberley	Bofinger (1967)
Whitewater Volcanics	1785 ± 17 1912 ± 107	Rb-Sr whole-rock apparent isochron	West Kimberley	Bennett & Gellatly (1970)
Whitewater Volcanics	1823 ± 17	Rb-Sr whole-rock	East Kimberley	Bofinger (1967)
Bow River & Sophie Downs Granites	1815 ± 14	Rb-Sr whole-rock apparent isochron	Various in the East Kimberley	Bofinger (1967)
West Kimberley granites	1840 ± 50	Rb-Sr whole-rock	West Kimberley	Bennett & Gellatly (1970)
Tickalara Metamorphics & gneissic granite	1920 ± 27	Rb-Sr whole-rock & mineral isochron	Various in the East Kimberley	Bofinger (1967)
Pegmatite	2680	Rb-Sr whole-rock	Dockrell 140 068	Bofinger (1967)

Note: several of the above Rb-Sr ages, in particular, are anomalous due to disturbance of whole-rock Rb-Sr during metamorphism and hydrothermal alteration. These ages have been reinterpreted by Page (1976), Page & others (1984), and Page & Hancock (1988). The Rb-Sr ages above are standardised to the ⁸⁷Rb decay constant of = 1.42 x 10⁻¹⁰ year⁻¹.

FIELDATA, ROCKCHEM - see below). The first OZCHRON release in 1993 contains U-Pb and Rb-Sr geochronological data from Proterozoic terranes in Australia. OZCHRON is divided into geological provinces and contains the following attribute information:

- geochronological technique;
- determined age and standard deviation;
- location co-ordinates as decimal values of latitude and longitude;
- sample site description and rock relationship data;
- stratigraphic group;
- formation name;
- source of data; and
- comments about the geological significance of the determined age.

Page & others (1993) describe the features of OZCHRON, and Blewett & Ryburn (1992: BMR Record 1992/27, 155-163) provide details of attributes, authority look-up tables, and other AGSO databases related to OZCHRON.

The data in Table 5 are subdivided into the three main age dating techniques of Sensitive High Resolution Ion Micro Probe (SHRIMP) U-Pb zircon, conventional U-Pb zircon, and Rb-Sr whole-rock/mineral. It should be noted that some caution should be observed when interpreting the ages obtained by Rb-Sr isotope systematics. Minimum ages can be obtained by this technique due to disturbance of the whole-rock Rb-Sr during metamorphism and hydrothermal alteration. This geochronological resetting is particularly evident for Rb-Sr ages from Archaean and Proterozoic terranes. Page (1976), Page & others (1984), and Page & Hancock (1988) have re-interpreted many of the Rb-Sr ages and their geological significance. Shaw & others (1992) have used K-Ar geochronology for the dating of deformational events in the King Leopold Orogen in the West Kimberley.

WHOLE-ROCK GEOCHEMISTRY

Whole-rock major and trace element analyses of samples collected from AGSO's Minerals and Land Use Programs regional mapping programs are available in province datasets from the digital database ROCKCHEM (contact Lesley Wyborn: ph 06 2449489, or write to Publications Sales, AGSO, GPO Box 378, Canberra ACT, 2601, fax: 06 2499982). All samples are located by either AMG and/or latitude-longitude co-ordinates. For each rock there are full major element analyses as well as up to 33 trace elements; for some samples, there are data on Au, Pt, and Pd concentrations. The datasets are available on diskette in ORACLE or ASCII format and each dataset is accompanied by a documentation record. Blewett & Ryburn (1992: BMR Record 1992/27, 155-163) provide details of attributes, authority look-up tables, and other AGSO databases related to ROCKCHEM.

The whole-rock geochemical data for AGSO samples on the Dixon Range 1 : 250 000 Sheet are contained within the *West Australian Proterozoic* dataset which contains a total of about 450 analyses and currently retails at \$900. The Halls Creek Block component of the *West Australian Proterozoic* dataset contains about 164 analyses. The locations of the ROCKCHEM samples on the Dixon Range

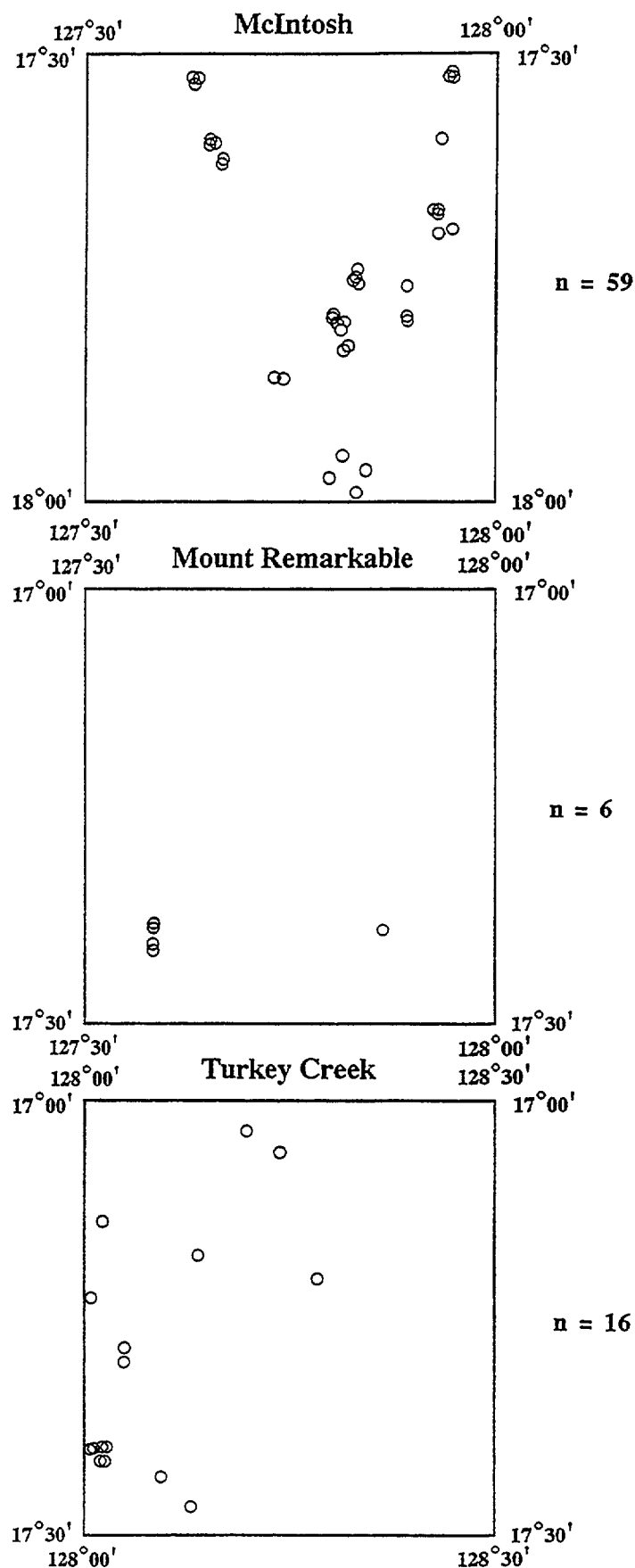


Figure 6. Location of samples for whole-rock geochemistry (ROCKCHEM) and geochronology (OZCHRON) in the McIntosh, Mount Remarkable, and Turkey Creek 1 : 100 000 sheets of the Dixon Range 1 : 250 000 Sheet. The number of analysed samples is indicated by the number to the right of the sheet.

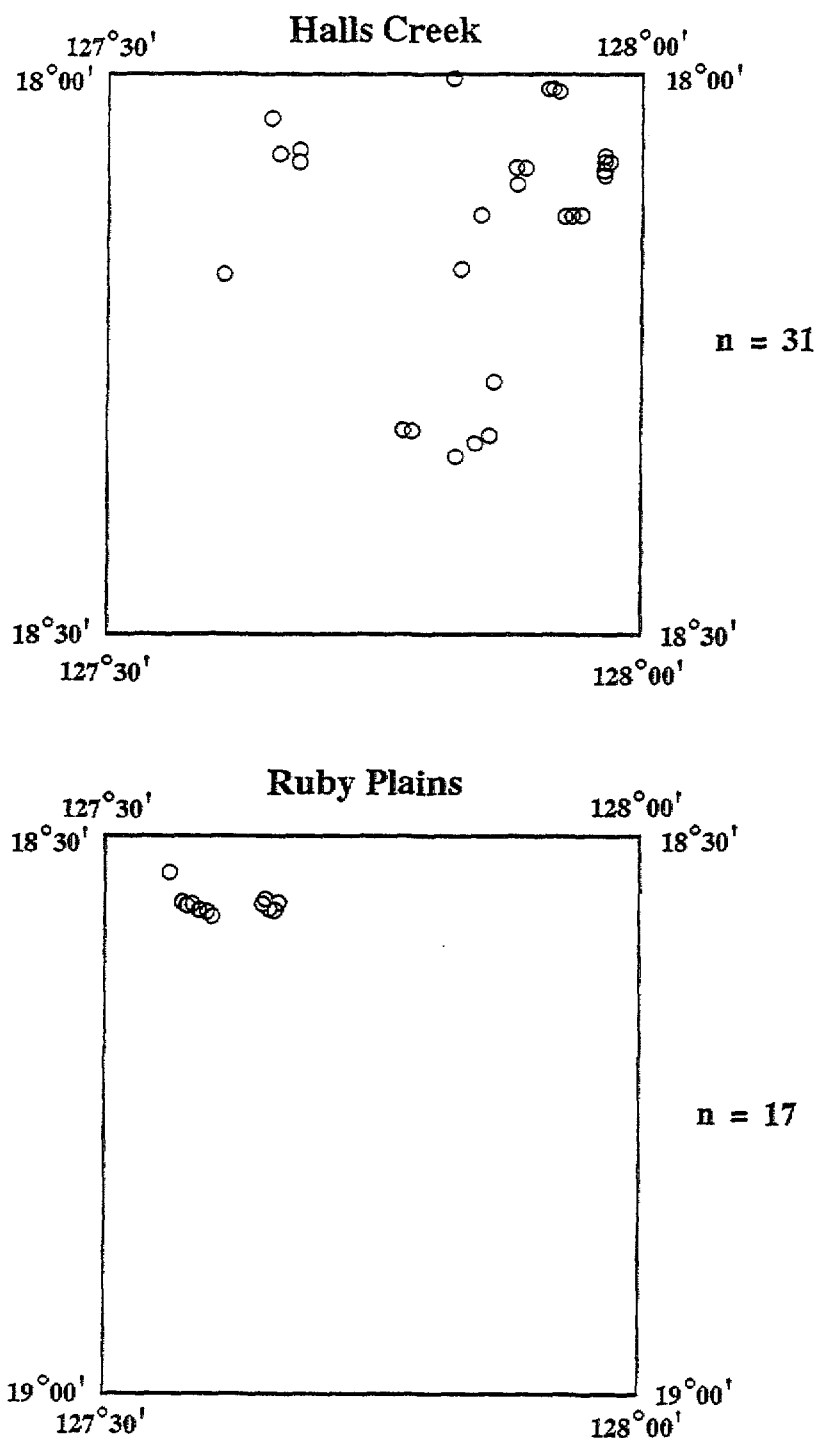


Figure 7. Location of samples for whole-rock geochemistry (ROCKCHEM) and geochronology (OZCHRON) in the Halls Creek and Ruby Plains 1 : 250 000 Sheet. The number of analysed samples is indicated by the number to the right of the sheet.

and Gordon Downs 1 : 250 000 sheets are indicated on the five 1 : 100 000 sheet areas of Figures 6 and 7 (also includes OZCHRON sample locations). No samples have been analysed from the other 1 : 100 000 sheets. Analyses in ROCKCHEM are of rocks from the Alice Downs Ultrabasics, Biscay Formation, Bow River Granite, Ding Dong Downs Volcanics, Mabel Downs Granodiorite, McIntosh Gabbro, Sally Downs Granite, Saunders Creek Formation, Sophie Downs Granite, Tickalara Metamorphics, and Woodward Dolerite.

Geochemical data for a further 200 samples collected by AGSO during the 1992 Kimberley field mapping program will be available for purchase in 1994. These samples are from the Dixon Range and Gordon Downs 1 : 250 000 sheets and include the Alice Downs Ultrabasics, Biscay Formation, Bow River Granite, Carson Volcanics, Ding Dong Downs Volcanics, McIntosh Gabbro, Olympio Formation, Saunders Creek Formation, Tickalara Metamorphics, and Woodward Dolerite.

The GSWA has whole-rock major and trace element data on all major igneous rock units from the southern part of the East Kimberley, apart from the layered mafic-ultramafic intrusives which have been sampled by AGSO. The GSWA data includes 49 analyses from the Lamboo Complex on the Gordon Downs 1 : 250 000 Sheet, 52 analyses from the Lamboo Complex on the Dixon Range 1 : 250 000 Sheet (all on the McIntosh 1 : 100 000 Sheet), and a further 100 analyses from the Lamboo Complex and Kimberley Basin on the Lansdowne and Mount Ramsay 1 : 250 000 sheets. A further 40 samples are to be analysed shortly, and further sampling by GSWA and AGSO will be carried out as field mapping progresses into the northern part of the Halls Creek Orogen. The data will be published with accounts of the geology, and ultimately will be available through the GSWA database ROCKMIN (under development) and the AGSO database ROCKCHEM.

MINERAL OCCURRENCES

Mineral occurrences for the Dixon Range and Gordon Downs 1 : 250 000 sheets are contained within the Mineral Occurrence Location Database (MINLOC). MINLOC, which is available from AGSO (contact Brian Elliot: ph 06 2449502, or write to Publications Sales, AGSO, GPO Box 378, Canberra ACT, 2601, fax: 06 2499982) and BRS, contains the following information about each occurrence:

- occurrence name;
- a description of the occurrence (e.g., abandoned mine, prospect, open cut);
- commodities of economic interest;
- source map scale; and
- a full bibliographic or map reference for each data point.
- location co-ordinates as decimal values of latitude and longitude;
- map sheet name & number;

Customers can select MINLOC data for a standard map sheet area. The data are provided on disk as digital datasets in ASCII format. They can also be supplied as an Oracle export file or in formats suitable for Dbase or Paradox. For a standard 1 : 1 million sheet area (comprising sixteen adjacent 1 : 250 000 map sheets), the charge is 20 cents/data point. For smaller areas (1 : 250 000 or 1 : 100 000 maps) the charge is 50 cents/data point. The number of occurrences listed in MINLOC for

the 100 000 sheets of the Dixon Range 1 : 250 000 Sheet are Mount Remarkable (1), Turkey Creek (24), Osmond (5), McIntosh (12), and Dixon (2), and these are shown in Table 6. The number of occurrences listed in MINLOC for the 100 000 sheets of the Gordon Downs 1 : 250 000 Sheet are Halls Creek (25), Antrim (2), and Ruby Plains (1), and these are shown in Table 7. MINLOC overlay maps (at 1 : 250 000 and 1 : 100 000 scales, translucent paper) are available at \$25 each. Non-standard scaled overlays are available at various costs.

RECENT AERIAL PHOTOGRAPHY

Colour aerial photographs at 1 : 25 000 scale were used for the NGMA field program by AGSO-GSWA in the East Kimberley. These were flown in 1990 (Angelo, Dockrell, Ruby Plains, Halls Creek), 1991 (Tunganary, McIntosh, Dixon), and in 1992 (Mount Remarkable, Turkey Creek), and are available from the Western Australia Department of Land Administration (DOLA), Perth. Black and white aerial photography flown in 1988 at 1 : 50 000 scale is also available for Dixon Range and Gordon Downs 1 : 250 000 sheet areas from DOLA.

COMPANY INFORMATION

Details of exploration companies that have recently operated in the East Kimberley are listed in Table 8. This is not an exhaustive listing and contact details are subject to change.

**Table 6. Deposits listed in MINLOC for the 1 : 100 000 sheets of the Dixon Range
1 : 250 000 Sheet**

Occurrence name	Reference point	Commodity	Latitude	Longitude	Location accuracy
Mount Remarkable 1 : 100 000 Sheet					
Keller Creek	Prospect	Ni, Cu	17.3122	127.9583	101 - 250 m
Turkey Creek 1 : 100 000 Sheet					
Corkwood	Prospect	Ni, Cu	17.3333	128.1778	101 - 250 m
Corkwood West	Occurrence	Cu	17.3889	128.1222	101 - 250 m
Fish Hole Waterhole	Occurrence	Cu	17.417	128.183	> 500 m
Frank River	Occurrence	Cu	17.45	128.189	> 500 m
Froghollow Spring	Occurrence	Cu	17.2694	128.0472	101 - 250 m
Mabel Downs East	Occurrence	Cu	17.2111	128.2194	101 - 250 m
McHales	Occurrence	Cu	17.0861	128.2878	51 - 100 m
Osmond Creek	Occurrence	Cu	17.2278	128.3167	101 - 250 m
Osmond Range West	Occurrence	Cu	17.2889	128.2361	101 - 250 m
Sally Malay	Deposit	Ni, Cu, Co	17.353	128.022	101 - 250 m
Tickalara Bore	Occurrence	Cu	17.3694	128.0056	101 - 250 m
Unnamed	Minor occurrence	Cu	17.4498	128.1906	101 - 250 m
Unnamed	Minor occurrence	Cu	17.4183	128.1812	101 - 250 m
Unnamed	Minor occurrence	Cu	17.4084	128.3151	101 - 250 m
Unnamed	Minor occurrence	Cu	17.287	128.2386	101 - 250 m
Unnamed	Minor occurrence	Pb	17.2214	128.2507	101 - 250 m
Unnamed	Minor occurrence	Cu	17.2277	128.3185	101 - 250 m
Unnamed	Minor occurrence	Fe	17.3749	128.2738	101 - 250 m
Unnamed	Minor occurrence	Cu	17.3903	128.1229	101 - 250 m
Unnamed	Minor occurrence	Cu	17.3838	128.0225	101 - 250 m
Unnamed	Minor occurrence	Fe	17.2191	128.2579	101 - 250 m
Unnamed	Minor occurrence	Cu	17.2103	128.2213	101 - 250 m
Unnamed	Minor occurrence	Cu	17.0991	128.2703	101 - 250 m
Unnamed	Prospect	Cu	17.086	128.2877	101 - 250 m
Osmond 1 : 100 000 Sheet					
Mount Elder	Occurrence	Cu	17.2278	128.925	101 - 250 m
Osmond Range	Occurrence	Cu	17.133	128.517	> 500 m
Unnamed	Minor occurrence	Asbestos	17.0162	128.8134	101 - 250 m
Unnamed	Minor occurrence	Fe	17.181	128.7187	101 - 250 m
Unnamed	Minor occurrence	Cu	17.1348	128.5153	101 - 250 m
McIntosh 1 : 100 000 Sheet					
Fourteen Mile Bore	Occurrence	Cu	17.6778	127.9694	101 - 250 m
Mount Coghlan	Occurrence	Cu	17.983	127.958	> 500 m
Panton intrusion	Deposit	Pt, Pd, Cr, Cu, Ni	17.750	127.833	101 - 250 m
Roses Bore	Occurrence	Cu	17.6778	127.8472	101 - 250 m
Unnamed	Abandoned mine	Unspecified	17.7348	127.8842	101 - 250 m
Unnamed	Minor occurrence	Cu	17.9811	127.9569	101 - 250 m
Unnamed	Prospect	Cr, Ni, Pt, Pd, Cu	17.7935	127.8098	101 - 250 m
Unnamed (Grants Patch)	Abandoned mine	Au	17.8161	127.9487	101 - 250 m
Unnamed (Grants Patch)	Abandoned mine	Au	17.8281	127.9203	101 - 250 m
Unnamed (Grants Patch)	Abandoned mine	Au	17.8284	127.9389	101 - 250 m
Unnamed (Grants Patch)	Abandoned mine	Au	17.8215	127.9487	101 - 250 m
Unnamed (Grants Patch)	Abandoned mine	Au	17.8183	127.9539	101 - 250 m
Dixon 1 : 100 000 Sheet					
Bungle Bungle Outcamp	Occurrence	Cu	17.7611	128.3139	101 - 250 m
Unnamed	Prospect	Au	17.679	128.1176	101 - 250 m

**Table 7. Deposits listed in MINLOC for the 1 : 100 000 sheets of the Gordon Downs
1 : 250 000 Sheet**

Occurrence name	Reference point	Commodity	Latitude	Longitude	Location accuracy
Halls Creek 1 : 100 000 Sheet					
Brockman	Deposit	Nb, Ta, Y, Zr, REE	18.316	127.783	> 500 m
Bulman Waterhole	Occurrence	Cu	18.1	127.975	> 500 m
Duffers	Abandoned mine	Au	18.0264	127.8567	101 - 250 m
Faugh and Ballagh	Abandoned mine	Au	18.3136	127.8509	101 - 250 m
Golden Crown	Abandoned mine	Au	18.3226	127.8449	101 - 250 m
Golf Course	Prospect	Cu, Pb, Zn	18.2111	127.6583	101 - 250 m
Ilmars	Prospect	Cu, Pb, Zn	18.067	127.861	> 500 m
Lady Margaret	Abandoned mine	Au	18.3273	127.833	101 - 250 m
Little Mount Isa	Prospect	Cu, Pb, Zn	18.0889	127.8444	101 - 250 m
Reform	Abandoned mine	Au	18.4692	127.5793	101 - 250 m
Ruby Queen	Abandoned mine	Au	18.4547	127.7463	101 - 250 m
St Lawrence	Abandoned mine	Au	18.4487	127.7463	101 - 250 m
Twelve Mile	Abandoned mine	Au	18.2913	127.8652	101 - 250 m
Unnamed	Prospect	Cu	18.0682	127.8607	101 - 250 m
Unnamed	Minor deposit	Cu	18.0904	127.8438	101 - 250 m
Unnamed	Abandoned mine	Au	18.2546	127.7736	101 - 250 m
Unnamed	Abandoned mine	Au	18.3975	127.6928	101 - 250 m
Unnamed	Abandoned mine	Au	18.4171	127.6416	101 - 250 m
Unnamed	Abandoned mine	Au	18.4933	127.5598	101 - 250 m
Unnamed	Abandoned mine	Unspecified	18.4503	127.7653	101 - 250m
Unnamed	Abandoned mine	Au	18.2735	127.7672	101 - 250 m
Unnamed	Abandoned mine	Au	18.2454	127.7716	101 - 250 m
Unnamed	Prospect	U	18.0944	127.9514	101 - 250 m
Unnamed	Prospect	U	18.0819	127.9614	101 - 250 m
Unnamed (Mount Bradley)	Abandoned mine	Au	18.3518	127.823	101 - 250 m
Antrim 1 : 100 000 Sheet					
Coolibah Creek	Occurrence	Cu	18.2389	128.3222	101 - 250 m
Mountnahan	Occurrence	Cu	18.1361	128.0583	101 - 250 m
Ruby Plains 1 : 100 000 Sheet					
Unnamed	Abandoned mine	Au	18.5133	127.5574	101 - 250 m

Table 8. Exploration companies that have recently operated in the East Kimberley

Company	Commodities	Address	Contact*
Afro-West Mining Ltd	Diamonds, Au	72-74 Canning Hwy, Victoria Park, WA 6100	Ray Valentin, ph: 09 470 2644; fax: 09 470 1012
Anglo Australian Resources NL	Au, Cu-Pb-Zn	8 Stone St, South Perth, WA 6151	Alastair Hunter, ph: 09 367 4832; fax: 09 367 9514
Argyle Diamond Mines Pty Ltd	Diamonds	2 Kings Park Rd, West Perth, WA 6005	David Karpin, ph: 09 482 1166; fax: 09 482 1161
Ashton Mining Ltd	Diamonds	441 St Kilda Rd, Melbourne, Vic 3004	John Robinson, ph: 03 867 5500; fax 03 820 4033
Audax Resources NL	Au	125 Edward St, Perth, WA 6000	Gary Roper, ph: 09 328 4622; fax: 09 328 2869
Auridiam Consolidated NL	Au, Diamonds	5 Hasler Rd, Herdsman, WA 6017	Peter Rowe, ph: 09 445 1166; fax: 09 244 2640
Australian Coal & Gold Holdings Ltd	Au	97 Lewis Rd, Wantirna South, Vic 3152	Peter McDougall, ph: 03 800 1155; fax: 03 887 1915
Australian United Gold NL	Au, U	8-10 The Esplanade, Perth, WA 6000	Terry Smith, ph: 09 325 4344; fax: 09 325 6920
Australmin Holdings Ltd	PGEs, Cr, Au	154 Abernathy Rd, Belmont, WA 6151	John Bunting, ph: 09 277 8800
Billiton Australia	Cu-Pb-Zn, Au	1 Spring St, Melbourne, Vic 3000	Bob Beeson, ph: 03 666 5563; fax: 03 666 5839
Cambridge Gulf Exploration NL	Diamonds	18 High St, Fremantle, WA 6160	Peter Jones, ph: 09 430 6100; 09 430 5928
Capricorn Resources Australia NL	Diamonds	251-257 Hay St, East Perth, WA 6000	Tony Gates, ph: 09 325 6733; fax: 09 221 2314
CRA Exploration Ltd	Cu-Pb-Zn, Au	55 Collins St, Melbourne, Vic 3000	Ian Gould, ph: 03 658 3333; fax: 03 604 0255
Dry Creek Mining NL	Au, PGEs	49 Melville Pde, South Perth, WA 6151	Craig Marshall, ph: 09 474 2113; fax: 09 367 9386
Gold Partners NL	Au	28 The Esplanade, Perth, WA 6000	David Swain, ph: 09 481 1690; fax: 09 481 6054
Hardman Resources NL	Diamonds	97 Outram St, West Perth, WA 6005	David Steinepreis, ph: 09 481 1965; fax: 09 322 4129
Helix Resources NL	PGEs, Au	46 Ord St, West Perth, WA 6005	Robert Mosig, ph: 09 321 2644; fax: 09 321 3909
Hunter Resources Ltd	PGEs, Au	21-23 Grosvenor St, Neutral Bay, NSW 2089	Craig Williams, ph: 02 904 1788; fax: 09 904 1812
King Mining Corp Ltd	Au	36 Kings Park Rd, West Perth, WA 6005	Kevin Starceovich, ph: 09 325 5377; fax: 09 325 8719
Max Resources NL	Diamonds	2 Colin Grove, West Perth, WA 6005	Craig Marshall, ph: 09 321 2933; fax: 09 321 3616
Minsaco Resources Pty Ltd	PGEs, Au, Cr	200 Holt St, Pinkenba, Qld 4008	John Smart, ph: 07 260 1140; fax: 07 260 1142
Money Mining NL	Au, Cu-Pb-Zn	51 Hunter St, Kalgoorlie, WA 6430	Robert Money, ph: 090 213 628; fax: 090 217 147
Moonstone Mines NL	Diamonds	251-257 Hay St, East Perth, WA 6004	Maureen Muggeridge, ph: 09 221 3599; fax: 09 221 3788
Noranda Australia Ltd	PGEs, Au	55 Collins St, Melbourne, Vic 3000	C. Logan, ph: 03 653 9425; fax: 03 653 9494
Normandy Poseidon Ltd	Diamonds, Ni, Cu	100 Hutt St, Adelaide, SA 5000	Mike Young, ph: 08 303 1700; fax: 08 232 0198
Pancontinental Mining Ltd	Au, PGEs, Cr	16 Hehir St, Belmont, WA 6014	Bob Perring, ph: 09 478 2333; fax: 09 478 1719
Poseidon Exploration Ltd	Diamonds, Au, Ni	8 Kings Park Rd, West Perth, WA 6005	Manfred Marx, ph: 09 480 3232; fax: 09 480 3230
Precious Metals Australia Ltd	Au	9 Bowman St, South Perth, WA 6151	Andrew McKee, ph: 09 221 3711; fax: 09 221 3546
Roebuck Resources NL	Au	33 Ord St, West Perth, WA 6005	Peter Allchurch, ph: 09 324 1233; fax: 09 324 1224
Southern Ventures NL	Au	10 Richardson St, West Perth, WA 6005	Robert Edwards, ph: 09 426 6400; fax: 09 426 6440
Stirling Resources NL	Diamonds	57 Havelock St, West Perth, WA 6005	Ted Ellyard, ph: 09 322 5945; fax: 09 481 0663
Stockdale Prospecting Ltd	Diamonds	60 Wilson St, South Yarra, Vic 3141	Dermot Coleman, ph: 03 827 7522; fax: 03 826 0974
Striker Resources NL	Diamonds	256 Adelaide Tce, Perth, WA 6000	Hugh Durey, ph: 09 221 3355; fax: 09 221 1730
Terrex Resources NL	Diamonds	57 Havelock St, West Perth, WA 6005 West Perth, WA 6005	Brian Smith, ph: 09 481 4101; fax: 09 481 John Jones, ph: 09 481 1277; fax: 09 321 8237

Sources of information: Registers of Australian Mining 1989/90, 90/91, 91/92, 92/93; GSWA - WAMEX listings of open-file company reports from 1988 for the Dixon Range, Gordon Downs, and Ruby Plains 1 : 250 000 sheets.* Contact person may be involved in administration and/or exploration. Note that the contact details are subject to change.

BIBLIOGRAPHY

Index A₁ - references pertaining to the Dixon Range 1 : 250 000 Sheet area (SE/52-6)

1. AFRO-WEST MINING AND EXP. PTY. LTD., 1983-1989 - Osmond diamond/PGE exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4268, Fiche 5550-5552 - M3665/2.
2. AGIP NUCLEARE AUSTRALIA PTY. LTD., 1972-1974a - Mount Remarkable uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 86/A, Microfilm roll 108 - M1495/1, 22 pp.
3. AGIP NUCLEARE AUSTRALIA PTY. LTD., 1972-1974b - Dougalls Bore uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 138, Microfilm roll 113 - M1151, 13 pp.
4. ALLEN, A. D., 1965 - Hydrogeology of the Lansdowne and Mt Ramsay 1 : 250 000 Geological Sheets, Kimberley Division, Western Australia. *Western Australia Geological Survey, Record* 1965/9.
5. ALLEN, A. D., 1966a - An outline of the hydrogeology of Nicholson, Gordon Downs, Flora Valley, Sturt Creek, Ord River, Turner River and Spring Creek Stations (Vestey's Stations), East Kimberley, Western Australia. *Western Australia Geological Survey, Record* 1966/4.
6. AUSTRALIAN ANGLO AMERICAN LTD., 1972a - Paynes Gossan East nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/J, Microfilm roll 194 - M1181/10, 2 v.
7. AUSTRALIAN ANGLO AMERICAN LTD., 1972b - Snake copper-lead exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/K, Microfilm roll 194 - M1181/11, 2 v.
8. AUSTRALIAN ANGLO AMERICAN LTD., 1972c - Stream geochemical survey base metals exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/S, Microfilm roll 194 - M1181/19, 1 v.
9. AUSTRALIAN ANGLO AMERICAN LTD., 1972-1973 - Turkey Creek nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/C, Microfilm roll 194 - M1181/3, 2 v.
10. AUSTRALIAN ANGLO AMERICAN LTD., 1972-1976 - Halls Creek base metal exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3702, Fiche 4065-4077 - M4259.
11. AUSTRALIAN GOLD DEVELOPMENT NL., 1986-1989 - Corkwood Yard xenotime/REE exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4802, Fiche 6970-6972.
12. AUSTRALIAN ORES AND MINERALS PTY. LTD., 1986-1987 - Old Hann/Sally Malay gold/PGE exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3742, Fiche 4129 - M5812.

13. BARNES, S. J., PERRING, R. J., & BUNTING, J. A., 1991 - Mafic-ultramafic intrusions of the East Kimberley region. In BARNES, S. J., & HILL, R. E. T. (Editors) - **MAFIC-ULTRAMAFIC COMPLEXES OF WESTERN AUSTRALIA**, Excursion Guidebook No. 3. Sixth International Platinum Symposium, July, 1991, Perth, Western Australia. *IAGOD and the Geological Society of Australia*, 10-13.
14. BEERE, G. M., 1983 - The Piccaninny Structure - A cryptoexplosive feature in the Ord Basin, East Kimberley. *Western Australia Geological Survey, Record* 1983/006, 8 pp.
15. BINNS, M. J., JOASS, G. G., ANNETT, R., O'SHEA, P. J., & DOIG, P. J., 1978-1982 - Panton River uranium/diamond exploration by Mobil Energy Minerals Aust. Inc. & Stockdale Prospecting Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1689, Microfilm roll 515 - M2412, 332 pp.
16. BLACK HILL MINERALS LTD., & CARIS CORPORATION LTD., 1982-1983 - Sally Downs molybdenum-tungsten exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2488, Fiche 1322 - M3464.
17. BORNER, J. E., 1980-1982 - Mount Remarkable uranium/diamond exploration by Uranerz (Australia) Pty. Ltd., Geopeko Ltd. & Mintek Services. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1559, Microfilm rolls 482 - M2686, 124 pp.
18. BOURKE, P. R., 1990 - The geochemistry and structure of a sequence of PGE-bearing chromitite seams at the Panton Sill layered intrusion, East Kimberley Region, Western Australia. BSc.(Hons.) thesis, University of Western Australia, Australia (unpublished).
19. BRIGGS, I., 1972-1973 - Ord prospect copper-nickel exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/Q, Microfilm roll 194 - M1181/17, 3 v.
20. BRIGGS, I., 1972-1976 - Corkwood nickel-copper exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/F, Microfilm roll 194 - M1181/6, various paging.
21. BRIGGS, I., 1973-1974 - Wills Creek copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/L, Microfilm roll 194 - M1181/12, 3 v.
22. BROKEN HILL PTY. CO. LTD., 1968-1972 - Kimberley uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3355, Fiche 3202 - M338/2.
23. BROKEN HILL PTY. CO. LTD., 1973-1975 - Mabel Downs and Keller Creek nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/K, Microfilm roll 215 - M1250/11, 89 pp.
24. BROKEN HILL PTY. CO. LTD., 1981-1982 - TR 7433H and TR 7435H - Mount Ranford and Mount John diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1292, Microfilm roll 417 - M2633/1, 82 pp.

25. CHADWICK, R. C., 1982-1984 - Palm Well and Robin Soak tin-tungsten-molybdenum exploration by West Coast Holdings Ltd., Command Minerals NL, & Mintek Services. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1838, Microfilm rolls 569 - M3446, 139 pp.
26. CHAPMAN, F., 1937 - Cherty limestone with *Planorbis* from the Mount Elder Range, Western Australia. *Proceedings of the Royal Society of Victoria*, 50, 59-66.
27. CODNER, C. C., 1978-1979 - Mini M and Togo 5 chromite/base metals exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 878, Microfilm roll 245 - M2384/3, 29 pp.
28. CRA EXPLORATION PTY. LTD., & STRATMIN MINERALS PTY. LTD., 1971-1973 - Killarney Bore copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/D, Microfilm roll 215 - M1250/4, various paging.
29. CRESWICK, R., DEICHMANN, G., & JOHNS, C., 1987 - Should we see, or save, - the Bungle Bungles? *Geo* 9(1) March-May, 100-113.
30. DAMPIER MINING CO. LTD., 1972-1973 - Sally Malay nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/J, Microfilm roll 215 - M1250/10, various paging.
31. DAMPIER MINING CO. LTD., 1980 - Mount Parker diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1194, Microfilm roll 403 - M2633/2, 6 pp.
32. DAMPIER MINING CO. LTD., & STRATIN MINERALS PTY. LTD., 1971-1973a - Billymac Spring nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/B, Microfilm roll 215 - M1250/2, various paging.
33. DAMPIER MINING CO. LTD., & STRATIN MINERALS PTY. LTD., 1971-1973b - Coolumbooloo Yard nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/C, Microfilm roll 215 - M1250/3, various paging.
34. DAMPIER MINING CO. LTD., & STRATIN MINERALS PTY. LTD., 1971-1973c - McKenzies Spring and McKenzies East nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/E, Microfilm roll 215 - M1250/5, various paging.
35. DAMPIER MINING CO. LTD., & STRATIN MINERALS PTY. LTD., 1971-1973d - Springvale Sill nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/H, Microfilm roll 215 - M1250/8, various paging.
36. DAMPIER MINING CO. LTD., & STRATIN MINERALS PTY. LTD., 1971-1973e - Tickalara Bore nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/I, Microfilm roll 215 - M1250/9, various paging.
37. DAVIES, H., 1973-1974 - Panton River copper-lead-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 546/B, Microfilm roll 182 - M1606/2, 2 pp.

38. DOW, D. B., & GEMUTS, I., 1967 - Dixon Range, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SE/52-6*, 15 pp.
39. DOW, D. B., & GEMUTS, I., PLUMB, K. A., & DUNNET, D., 1964 - The geology of the Ord River Region, Western Kimberley. *Bureau of Mineral Resources, Australia, Record 1964/104*.
40. DURACK MINES LTD., 1970 - Durack Ranges, Western Australia. Australian Anglo American Limited D 8107, 45 pp.
41. EL-ANSARY, M., HARRIS, J. R., BARBER, T. St. J., & HERBERT, H. K., 1963-1973 - Kimberley mineral fields exploration by Pickands Mather & Co. International Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/D, Microfilm rolls 126-128, 130, 131 - M67.
42. FINUCANE, K. J., 1939a - The Grants Creek gold mining centre (Panton River), East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report 40*, 8 pp.
43. FLETCHER, R. J., CROXFORD, N. J. W., & JOHNSON, G., 1977-1980 - Saunders Creek copper-zinc and uranium exploration by Carpentaria Exploration Co. Pty. Ltd. & Robertson Research Australia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1588, Microfilm roll 486 - M2254/2, 195 pp.
44. FREEPORT OF AUSTRALIA INC., 1982-1983 - Katy Yard gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2427, Fiche 1160 - M3327.
45. FREEPORT OF AUSTRALIA INC., 1984-1989 - Mount Coghlan/Woodwards Creek/Prospect Creek gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3910, Fiche 4520-4527 - M3912.
46. GARDENER, J. E. F., 1960 - Halls Creek area, airborne radiometric survey, Western Australia, 1959. *Bureau of Mineral Resources, Australia, Record 1960/46*, 5 pp.
47. GARLICK, H. J., 1979-1983 - Dunham diamond exploration by Gem Exploration and Minerals Ltd. & Pacific Exploration Consultants Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1661, Microfilm roll 507 - M2600/1, 673 pp.
48. GAUNT, G. F. McA., 1972-1977 - Osmond Valley area 2 nickel-copper exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/E, Microfilm roll 194 - M1181/5, various paging.
49. GAUNT, G. F. McA., 1976-1978 - Keller Creek nickel-copper exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 742, Microfilm roll 216 - M2034, 121 pp.
50. GEM EXPLORATION AND MINERALS LTD., 1980 - Mount Remarkable tin/tungsten exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3287, Fiche 3066 - M2720.
51. GEM EXPLORATION AND MINERALS LTD., 1983-1986 - Ord River diamond/gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2747, Fiche 2018-2019 - M 2600/4.

52. GEM EXPLORATION AND MINERALS LTD., 1984-1985 - Castlereagh tin/tungsten exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2744, Fiche 2011 - M2600/7.
53. GEOPEKO LTD., 1984 - Dixon Range platinum exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2177, Fiche 599-602 - M3865.
54. GEOPEKO LTD., 1986-1989 - Springvale platinum/chromite exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4592, Fiche 6447-6448.
55. GEOPEKO LTD., 1986-1990 - Toby Sill platinum exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4326, Fiche 5755-5757 - M4713.
56. GIBSON, B. G., 1982 - Panton Sill Prospect. Unpublished report. Union Corporation (Australia) Pty. Ltd. Bulletin 65, (Addendum 15).
57. GILFILLAN, M. A., SMITH, C. B., HAEBIG, E. A., & FIELDING, D. C., 1976-1982 - Wilson River diamond exploration by CRA Exploration Pty. Ltd. & other companies. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1517, Microfilm rolls 477 - M1863, 114 pp.
58. GREGORY, G. P., 1980-1981 - TR 7668H - Alice Hill diamond exploration by Seltrust Mining Corporation Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1199, Microfilm rolls 403 - M2712, 27 pp.
59. HADOWILL PTY. LTD., 1986-1988 - Springvale PGE exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3796, Fiche 4222-4223 - M5018.
60. HAMLYN, P. R., 1977 - Petrology of the Panton and McIntosh layered intrusions, Western Australia, with particular reference to the genesis of the Panton chromite deposit. Ph.D. thesis, University of Melbourne, Australia (unpublished).
61. HAMLYN, P. R., 1980 - Equilibration history and phase chemistry of the Panton Sill, Western Australia. *American Journal of Science*, 280 (7), 631-668.
62. HAMLYN, P. R., & KEAYS, R. R., 1979 - Origin of chromite compositional variation in the Panton Sill, Western Australia. *Contributions to Mineralogy and Petrology*, 69 (1), 75-82.
63. HAWLEY, D. L., ORR, D. B., OSTLE, D., BRUINSMA, J. W., FREEMAN, R. S., OWEN, D. E., & ENGLISH, P. W., 1968-1972 - Durack Range copper/uranium exploration by Australian Anglo American Ltd. & other companies. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 787/C, Microfilm rolls 221, 222 - M340, 337 pp.
64. HOATSON, D. M., 1993 - Correlation of structurally disrupted layered ultramafic-mafic intrusions in the East Kimberley: Is Big Ben part of the Panton intrusion? *AGSO Research Newsletter*, 19, 9-10.
65. HOATSON, D. M., & TYLER, I. M., 1993 - Prospective layered mafic-ultramafic intrusions in the East Kimberley. *AGSO Research Newsletter*, 18, 8-9.
66. HOYLE, M. W., & BRIGGS, I., 1975-1976 - Halls Creek North nickel-copper/copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 740, Microfilm roll 215 - M1838, 58 pp.

67. HUNTER RESOURCES LTD., 1989-1990a - Kimberley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4542, Fiche 6329-6331.
68. HUNTER RESOURCES LTD., 1989-1990b - Kimberley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4543, Fiche 6332-6333.
69. KERNICK, R. J., DAVIES, H., & GAUNT, G. F., 1972-1977 - Bulldust Flats nickel-copper exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/G, Microfilm roll 194 - M1181/7, various paging.
70. KIA ORA GOLD CORP. NL., 1970 - Martys Bore copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1539, Microfilm roll 479 - M3231/1.
71. KOSTLIN, E. C., 1969-1971 - Melrod Yard uranium/copper exploration by CRA Exploration Pty. Ltd., Minops Pty. Ltd., Tenneco Australia Inc., International Oils Exploration NL., & Timor Oil Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 383, Microfilm roll 163 - M695, 18 pp.
72. LAMBERT, J. F., CODNER, C. C., FANDER, H. W., & COWAN, D., 1978-1980 - Eileen Bore nickel-copper exploration by Australian Anglo American Ltd. & Central Mineralogical Services Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1585, Microfilm roll 485 - M2384/1, 121 pp.
73. LEMCKE, D. J., 1980-1981 - Keller Creek East copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1593, Microfilm roll 486 - M2457/4, 25 pp.
74. LEMCKE, D. J., FRASER, D. C., DVORAK, Z., & CODNER, C. C., 1978-1981 - Ord River nickel-copper exploration by Australian Anglo American Ltd. & Dighem Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1592, Microfilm roll 486 - M2457/3, 113 pp.
75. LEMCKE, D. J., FRASER, D. C., DVORAK, Z., CODNER, C. C., MARX, M. R., & DOIG, L. T., 1979-1983 - Turkey Creek nickel-copper/diamond exploration by Australian Anglo American Ltd. & Dighem Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1590, Microfilm roll 486 - M2457/1, 163 pp.
76. MAITLAND, A. G., 1920 - Note on the specimen of supposed bitumen from Turkey Creek, Kimberley Division. *Geological Survey of Western Australia, Annual Report* 1920, 8.
77. MARX, M. R., FRIED, T. R., CAWSEY, A. L., & DOIG, L. T., 1980-1983 - Turkey Creek and Frank River diamond/base metals exploration by Stockdale Prospecting Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1667, Microfilm roll 508 - M2630/4, 61 pp.
78. MATHISON, C. I., & HAMLYN, P. R., 1987 - The McIntosh layered troctolite-olivine gabbro intrusion, east Kimberley, Western Australia. *Journal of Petrology*, 28, 211-234.
79. MAZZONI, P. P., ROGERS, J. K., & LEMCKE, D. J., 1975-1981 - Alice Downs and Wills Creek nickel-copper exploration by Western Mining Corporation Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1639, Microfilm roll 503 - M1940, 745 pp.

80. MCGAIN, A., HALLOF, P. G., DONOVAN, P. R., ERSKINE, J., FIDLER, R. W., GOSLING, T. M., BURNSIDE, E., BURT, D., HART, J., & SMITH, R. J., 1968-1971 - Antrim copper exploration by Metals Exploration NL & other companies. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 733, Microfilm roll 214 - M295, 288 pp.
81. MCINTYRE, G. A., FLETCHER, R. J., HEMMING, G., & CAVANEY, R. J., 1980-1984 - Osmond Range base metal exploration by Carpentaria Exploration Pty. Ltd. & Samin Australia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1977, Microfilm roll 589 - M2705, 530 pp.
82. METALS MINIERE EXPLORATION PTY. LTD., URANERZBERGBAU GMBH CO., & URANERZ (AUSTRALIA) PTY. LTD., 1971-1979 - Kimberley gold field uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1168, Microfilm roll 294 - M648/1, 329 pp.
83. MINATOME AUSTRALIA PTY. LTD., 1982-1983 - Osmond Valley uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2172, Fiche 589 - M3188.
84. MINES EXPLORATION PTY. LTD., 1966-1967 - East Kimberley phosphate exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 112, Microfilm roll 110 - M154, 5 pp.
85. MONARCH PETROLEUM NL., 1978-1979 - TR 6737H and TR 6738H - Durack Ranges diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1024, Microfilm roll 268 - M2354/1, 17 pp.
86. MOSIG, R. W., & MILLS, B. G., 1971-1973 - Panton River nickel-copper exploration by Northern Mining Corp. NL & Westmex Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 737, Microfilm roll 214 - M678, 10 pp.
87. MULLER, D. W., COWAN, B. M., & WILKINSON, D. P., 1977-1978 - Palm Creek copper-zinc exploration by Samantha Mines Pty Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 631, Microfilm roll 196 - M2132, 18 pp.
88. NEVILL, M., 1974 - The geology and mineralization of the Corkwood Prospect area, Lamboo Complex, East Kimberleys, Western Australia. BSc.(Hons.) thesis, University of Western Australia, Australia (unpublished), 108 pp.
89. NEWTON-SMITH, J., 1972-1973 - Palm prospect copper exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/H, Microfilm roll 194 - M1181/8, 4 v.
90. NEWTON-SMITH, J., 1973a - 1796 prospect gold exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/M, Microfilm roll 194 - M1181/13, 3 v.
91. NEWTON-SMITH, J., 1973b - Saunders Creek copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/O, Microfilm rolls 194 - M1181/15, 3 v.

92. NEWTON-SMITH, J., RUGLESS, C. S., TAYLOR, G., & LAMBERT, J. F., 1972-1974 - Osmond Valley copper-lead-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/D, Microfilm roll 194 - M1181/4, 2 v.
93. NORANDA AUSTRALIA LTD., 1986-1988 - Alice Downs platinum exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3672, Fiche 4009 - M4705/2.
94. NORTHERN GOLD NL, 1987-1990 - Little gold river gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4433, Fiche 6085-6087.
95. PASSMORE, J. R., 1964 - The hydrogeology of the Cambridge Gulf, Lissadell and Dixon Range 4-mile Sheets. *Western Australia Geological Survey, Record 1964/2*.
96. PATERSON, D. A., 1981 - Kununurra diamond exploration by BHP Minerals Ltd. & Boyd Minerals Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1569, Microfilm rolls 482 - M3369, 29 pp.
97. PERRING, R. J., & VOGT, J. H., 1991a - The Panton Sill. *In* BARNES, S. J., & HILL, R. E. T. (Editors) - *MAFIC-ULTRAMAFIC COMPLEXES OF WESTERN AUSTRALIA*, Excursion Guidebook No. 3. Sixth International Platinum Symposium, July, 1991, Perth, Western Australia. *IAGOD and the Geological Society of Australia*, 97-106.
98. PERRING, R. J., & VOGT, J. H., 1991b - Platinum-group element mineralisation in the Panton Sill, East Kimberley region, Western Australia. *In* BARNES, S. J. (Editor) - *PROGRAMME AND ABSTRACTS, SIXTH INTERNATIONAL PLATINUM SYMPOSIUM*, July, 1991, Perth, Western Australia. *IAGOD and the Geological Society of Australia*, 44.
99. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1964-1967a - Grants Creek gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ch, Microfilm roll 126-127 - M67/59.
100. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1964-1967b - Panton River copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ci, Microfilm roll 127 - M67/63.
101. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1964-1968a - Violet Valley nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ck, Microfilm rolls 126-127 - M67/62.
102. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1964-1968b - Foal Creek nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cf, Microfilm roll 126 - M67/57.
103. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1964-1969 - Mabel Downs nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ch, Microfilm roll 126 - M67/59.
104. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1968a - Moola Bulla/Little Panton nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3064, Fiche 2623 - M67/68.

105. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1968b - Armanda Sill nickel-copper/copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cj, Microfilm roll 126 - M67/61.
106. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1968c - Springvale Sill Prospect nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cn, Microfilm roll 127 - M67/65.
107. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1969a - Fletcher Creek nickel-copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ci, Microfilm roll 126 - M67/60.
108. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1969b - Alice Downs nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cr, Microfilm roll 126 - M67/69.
109. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1965-1971 - McIntosh Sill Prospect nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cp, Microfilm roll 126 - M67/67.
110. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1967 - Mabel Hill molybdenum exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cm, Microfilm roll 127 - M67/64.
111. PICKANDS MATHER AND CO. INTERNATIONAL LTD., 1968-1971 - Ord Crossing/Tickalara Bore nickel-copper/ilmenite exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cg, Microfilm rolls 126-127 - M67/58.
112. PLANET MANAGEMENT & RESEARCH., 1968-1972 - Durack Range copper/uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 787/c, Microfilm rolls 221-222 - M340.
113. RATTIGAN, J. H., & CLARK, A. B., 1954-1955 - East Kimberley uranium exploration by Rio Tinto Finance & Exploration Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 395, Microfilm roll 165 - M647, 27 pp.
114. ROEBUCK RESOURCES NL., 1986-1989 - Slinkey Hill gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4088, Fiche 4947-4948 - M5265.
115. RUGLESS, C. S., KERNICK, R. J., & BRIGGS, I., 1972-1973 - Calico Spring copper/uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/I, Microfilm roll 194 - M1181/9, 5 v.
116. SAMPEY EXPLORATION PTY. LTD., 1980-1981 - Ruby Plains gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2825, Fiche 2255 - M2674.
117. SELTRUST PTY. LTD., 1980-1981 - TR 7869H - Mount Button diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1201, Microfilm roll 403 - M2724, 9 pp.

118. SEREM AUSTRALIA PTY. LTD., 1968-1971 - Mount Remarkable copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 735, Microfilm roll 214 - M528, 23 pp.
119. SHAW, R. W. L., FANDER, H. W., CODNER, C. C., & LEMCKE, D. J., 1978-1981 - Mabel Hill nickel-copper exploration by Australian Anglo American Ltd. & Central Mineralogical Services Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1586, Microfilm roll 485 - M2384/2, 43 pp.
120. SMART, J. V. S., 1978 - Panton Sill Prospect. Unpublished Report. Union Corporation (Australia) Pty. Ltd. Bulletin 65, Addendum 3A.
121. STOCKDALE PROSPECTING LTD., 1987-1988 - Linnekar diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3752, Fiche 4150 - M5521.
122. STRATIN MINERALS PTY. LTD., 1971-1973 - Panton-Elvire River copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738/G, Microfilm roll 215 - M1250/7, various paging.
123. STRATIN MINERALS PTY. LTD., & THESEUS EXPLORATION NL., 1971-1973 - Melon Patch nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 738F, Microfilm roll 215 - M1250/6, various paging.
124. THOMPSON, R. M., 1973 - Osmond Range lead-zinc exploration by Trend Exploration Pty. Ltd. & Exserv Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 464, Microfilm roll 172 - M1860, 13 pp.
125. THORNETT, J. R., 1981 - The Sally Malay deposit: gabbroid associated nickel-copper sulfide mineralization in the Halls Creek Mobile Zone, Western Australia. *Economic Geology*, 76 (6), 1565-1580.
126. WARREN, R. G., 1992 - District surrounding the Armanda Sill, Halls Creek Inlier, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1992/70.
127. WESTERN MINING CORPORATION LTD., 1978-1980 - Sandy Creek nickel-copper exploration. Unpublished Report. Open file - GSWA Item 1640, Microfilm roll 503 - M2341, 174 pp.
128. WESTERN MINING CORPORATION LTD., 1980-1981 - Elvire River gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2120, Fiche 445 - M2650/1.
129. WESTERN MINING CORPORATION LTD., 1981-1982 - Panton River diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1557, Microfilm rolls 482 - M2650/2, 16 pp.
130. WHITE, N. C., 1977 - Panton River copper-zinc exploration by Dampier Mining Co. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 744, Microfilm roll 216 - M2127, 8 pp.
131. WILDING, I. G. P., 1980 - Corkwood Cu:Ni prospect, Kimberleys, Western Australia. In BUTT, C. R. M., & SMITH, R. E. (EDITORS) - CONCEPTUAL MODELS IN EXPLORATION GEOCHEMISTRY - AUSTRALIA. *Journal of Geochemical Exploration*, 12, 220-224.

132. WILDING, I. G. P., BUTT, G., PEDERSEN, R., CODNER, C. C., FANDER, H. W., FRASER, D. C., & DVORAK, Z., 1976-1980 - East Kimberley nickel-copper exploration by Australian Anglo American Ltd, Central Mineralogical Services Pty Ltd, Dighem Ltd. & Geoterrex Pty Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1584, Microfilm roll 485 - M1855, 306 pp.

Index A2 - references by commodities pertaining to the Dixon Range 1 : 250 000 Sheet area (SE/52-6)

Base metals: 8, 10, 27, 41, 77, 81	Molybdenum: 16, 25, 110
Chromium: 13, 18, 27, 54, 55, 56, 60, 61, 62, 64, 65, 97, 98, 120	Nickel: 6, 9, 13, 19, 20, 23, 30, 32, 33, 34, 35, 36, 48, 49, 64, 65, 66, 69, 72, 74, 75, 79, 86, 88, 97, 98, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 119, 123, 125, 127, 131, 132
Copper: 6, 7, 9, 19, 20, 21, 23, 28, 30, 32, 33, 34, 35, 36, 37, 41, 43, 48, 49, 63, 64, 65, 66, 69, 70, 71, 72, 73, 74, 75, 79, 80, 86, 87, 88, 89, 91, 92, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 115, 118, 119, 122, 123, 125, 127, 130, 131, 132	Phosphate: 84
Diamond: 1, 15, 17, 24, 31, 47, 51, 57, 58, 75, 77, 85, 96, 117, 121, 129	Platinum-group elements: 1, 12, 13, 18, 53, 54, 55, 56, 59, 60, 61, 62, 64, 65, 93, 97, 98, 120
Gold: 12, 41, 42, 44, 45, 51, 64, 65, 67, 68, 82, 90, 94, 99, 114, 116, 128	Rare-earth elements: 11
Hydrogeology: 4, 5, 95	Tin: 25, 50, 52
Ilmenite: 111	Tungsten: 16, 25, 50, 52
Lead: 7, 37, 41, 92, 100, 105, 107, 118, 124	Uranium: 2, 3, 15, 17, 22, 43, 46, 63, 71, 82, 83, 112, 113, 115
	Zinc: 21, 37, 41, 45, 66, 70, 73, 87, 91, 92, 100, 105, 107, 118, 124, 130

Index A3 - references by location/prospect name pertaining to the Dixon Range 1 : 250 000 Sheet area (SE/52-6)

Alice Downs: 79, 93, 108	Corkwood: 20, 88, 131
Alice Hill: 58	Corkwood Yard: 11
Antrim: 80	Dougalls Bore: 3
Armanda Sill: 64, 105, 126	Dunham: 47
Big Ben intrusion: 64	Durack Range: 40, 63, 85, 112
Billymac Spring: 32	Eileen Bore: 72
Black Hills Yard intrusion: 64, 65	Elvire River: 122, 128
Bulldust Flats: 69	Fletcher Creek: 64, 107
Bungle Bungalies: 29	Foal Creek: 102 Frank River: 77
Calico Spring: 115	Grants Creek: 42, 99
Castlereagh: 52	Halls Creek North: 66
Coolumbooloo Yard: 33	Katy Yard: 44

**Index A3 - references by location/prospect name pertaining to the Dixon Range
1 : 250 000 Sheet area (SE/52-6) continued**

Keller Creek: 23, 49, 64	Osmond Range: 81, 124
Keller Creek East: 73	Osmond Valley: 48, 83, 92
Killamey Bore: 28	Palm: 89
Kununurra: 96	Palm Creek: 87
Linnekar: 121	Palm Well: 25
Little Gold River: 94	Panton River: 15, 37, 64, 65, 86, 100, 122, 129, 130
Little Panton: 104	Panton Sill: 13, 18, 56, 60, 61, 62, 64, 65, 97, 98, 120
Mabel Hill: 110, 119	Paynes: 6
Mable Downs: 23, 103	Piccaninmy: 14
Martys Bore: 70	Prospect Creek: 45
McIntosh Sill: 13, 60, 64, 65, 78, 109	Robin Soak: 25
McKenzies Spring: 34, 64	Ruby Plains: 116
McKenzies East: 34	Sally Downs: 16
Melon Patch: 123	Sally Malay: 12, 30, 64, 125
Melon Patch Sill: 64, 65	Sandy Creek: 127
Melrod Yard: 71	Saunders Creek: 43, 91
Mini M: 27	Slinkey Hill: 114
Mount Button: 117	1796: 90
Mount Coghlan: 45	Snake: 7
Mount Elder Range: 26	Springvale Sill: 13, 35, 54, 60, 64, 65, 106
Mount Parker: 31	Tickalara Bore: 36, 111
Mount Ranford: 24	Toby Sill: 13, 55, 64, 65
Mount John: 24	Togo 5: 27
Mount Remarkable: 2, 17, 50, 118	Togo Sill: 64, 65
Old Ham: 12	Turkey Creek: 9, 75, 76, 77
Ord Crossing: 111	Turner River Station: 5
Ord: 19	Violet Valley: 101
Ord River: 39, 51, 74	Wild Dog Creek intrusion: 64, 65
Ord River Station: 5	Wills Creek: 21, 79
	Wilson River: 57
	Woodwards Creek: 45

Index B1 - references pertaining to the Gordon Downs 1 : 250 000 Sheet area (SE/52-10)

1. ALLEN, A. D., 1966a - An outline of the hydrogeology of Nicholson, Gordon Downs, Flora Valley, Sturt Creek, Ord River, Turner River, and Spring Creek Stations (Vestey's Stations), East Kimberley, Western Australia. *Western Australia Geological Survey, Record* 1966/4.
2. ARCADIA MINERALS LTD., INTERWEST LTD., & ASIAN WESTCOAST FINANCE LTD., 1983-1989 - Mount Bradley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4397, Fiche 5949-5951.
3. ASARCO AUSTRALIA PTY. LTD., 1984-1986 - Koongie Park gold/silver exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4143, Fiche 5086-5088 - M6711.
4. ATTWATER, R. M., 1900 - Mount Bradley gold mine. Western Australia Mines Department file 164/20: copy of a report for Beswick, Moreing and Company, London.
5. AURIDIAM NL., 1986-1988 - Darcys gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3823, Fiche 4293-4294 - M5480.
6. AURIDIAM NL., 1986-1989 - Gentle Annie gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3980, Fiche 4717-4718 - M5505.
7. AUSTRALIAN ANGLO AMERICAN LTD., 1972-1976 - Halls Creek base metal exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3702, Fiche 4065-4077.
8. AUSTRALIAN UNITED GOLD NL., 1986-1988 - Coolibah Bore gold/base metal exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3625, Fiche 3943.
9. BARRIER PACIFIC RESOURCES LTD., 1986-1988 - Koongie Park Rockholes gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3546, Fiche 3661 - M4615.
10. BILLITON AUSTRALIA., 1987-1988 - Koongie Park copper-lead-zinc/gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4303, Fiche 5646 - M1168/5.
11. BILLITON AUSTRALIA., 1987-1991 - Little Mount Isa gold/base metal exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4770, Fiche 6863.
12. BINNS, M. J., JOASS, G. G., & ANNETT, R., 1978-1980 - Burks Park uranium/diamond exploration by Mobil Energy Minerals Aust. Inc. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1690, Microfilm roll 516 - M2411/1, 366 pp.
13. BINNS, M. J., JOASS, G. G., ANNETT, R., & O'SHEA, P. J., 1978-1981 - Butcher Creek uranium/diamond exploration by Mobil Energy Minerals Aust. Inc. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1692, Microfilm roll 517 - M2411/2, 675 pp.
14. BROKEN HILL PTY. CO. LTD., 1968-1972 - Kimberley uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3355, Fiche 3202 - M338/2.

15. BROKEN HILL PTY. CO. LTD., 1979-1980 - Halls Creek copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2683, Fiche 1803-1804 - M2659.
16. BUCKOVIC, W. A., 1984 - Niobium-enriched alkaline volcanics, Brockman Project, Kimberley Region, Western Australia. Union Oil Development Corporation, Report.
17. BURNS, A. R., 1983-1988 - Larranganni Bluff gold exploration by CRA Exploration Pty. Ltd. & Dry Creek Mining NL. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3754, Fiche 4152-4156.
18. CHADWICK, R. C., 1982-1984 - Palm Well and Robin Soak tin-tungsten-molybdenum exploration by West Coast Holdings Ltd., Command Minerals NL, & Mintek Services. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1838, Microfilm roll 569 - M3446, 139 pp.
19. CHADWICK, J., 1987 - Brockman's strategic metals. *International Mining* 4 (6), June, 37.
20. CHALMERS, D. I., 1990 - Brockman multi-metal and rare-earth deposit. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 707-709.
21. CLARK, A. B., & BLOCKLEY, J. G., 1960-1961 - Killi Killi Hills uranium-gold exploration by New Consolidated Gold Fields Australasia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 394, Microfilm roll 165 - M634, 31 pp.
22. CRA EXPLORATION PTY. LTD., 1971 - Kimberley copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3351, Fiche 3196-3198 - M1907.
23. CRA EXPLORATION PTY. LTD., 1990 - Black Elvire River gold and base metals exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4673, Fiche 6623.
24. CRABB, J. W., & CO. PTY. LTD., 1983-1986 - Blue Bar gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4476, Fiche 6166.
25. CULTUS PACIFIC NL, E AND B EXPLORATIONS, URANEX PTY. LTD., & MINEX INCORPORATED, 1978-1979 - Gordon Downs uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 796, Microfilm roll 223 - M2100/1, 15 pp.
26. DAVIES, H., 1973-1974a - Sophie Downs copper-lead-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 546/C, Microfilm roll 182 - M1606/3, 2 pp.
27. DAVIES, H., 1973-1974b - Five Mile Bore copper-lead-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/R, Microfilm roll 194 - M1181/18, 1 v.
28. DE LA HUNTY, L. E., 1955 - Report on the Kimberley radioactive deposits. *Western Australia Geological Survey, Bulletin* 112.
29. DEVENISH, C. E., 1982-1986 - Darcys gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3478, Fiche 3556 - M4484.

30. DIX, W. R., 1992 - Structure, metamorphism and mineralisation in the Sophie Downs, Ilmars region, Halls Creek, Western Australia. With emphasis on the Sophie Downs Dome. MSc. (Prelim.) thesis, Monash University, Australia (unpublished), 79 pp.
31. DOW, D. B., & GEMUTS, I., PLUMB, K. A., & DUNNET, D., 1964 - The geology of the Ord River Region, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1964/104, various paging.
32. DUNN, P. R., FIDLER, R. W., YATES, K. R., & PONTIFEX, R., 1973-1974 - Halls Creek uranium-niobium-tantalum exploration by Trend Exploration Pty. Ltd. & McPhar Geophysics Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 175, Microfilm roll 117 - M1288, 62 pp.
33. ELLIS, H. A., 1953 - Report on stock water supplies - Moola Bulla Native Station - East Kimberleys. *Western Australia Geological Survey, Annual Report* 1951, 5-7.
34. ENERGY RESERVES CANADA INC., 1980-1984 - Birrindudu uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2178, Fiche 603-609 - M2589.
35. ESSLEMONT, G., 1990 - The geology and geochemistry of the Brockman alkaline volcanics and rare metal deposit. BSc.(Hons.) thesis, University of Western Australia, Australia (unpublished), various paging.
36. FEROS, J. N., 1973-1974 - Reform uranium/base metal exploration by Esso Exploration & Production Australia Inc. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 406, Microfilm roll 166 - M1412, 318 pp.
37. FINUCANE, K. J., 1938a - The Halls Creek-Ruby Creek area, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 27.
38. FINUCANE, K. J., 1939a - The twelve-mile alluvial workings and Elvire River dredging reserves (893H and 948H), Halls Creek, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 42.
39. FINUCANE, K. J., & SULLIVAN, C. T., 1939 - The Mary River gold mining centre, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 41.
40. FLETCHER, R. J., 1973-1977 - Koongie Park copper-zinc exploration by Carpentaria Exploration Co. Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1589, Microfilm roll 486 - M2254/3, 7 pp.
41. FLETCHER, R. J., 1978-1979 - Sophie Downs copper-lead-zinc exploration by Carpentaria Exploration Co. Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1587, Microfilm roll 486 - M2254/1, 17 pp.
42. FLETCHER, R. J., CROXFORD, N. J. W., & JOHNSON, G., 1977-1980 - Saunders Creek copper-zinc uranium exploration by Carpentaria Exploration Co. Pty. Ltd. & Robertson Research Australia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1588, Microfilm roll 486 - M2254/2, 195 pp.

43. FREEPORT OF AUSTRALIA INC., 1981-1983 - Mount Bradley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2575, Fiche 1553 - M2910/2.
44. FREEPORT OF AUSTRALIA INC., 1984-1989 - Mount Coghlan/Woodwards Creek/Prospect Creek gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3910, Fiche 4520-4527 - M3912.
45. FRENCH, D. H., & RAMSDEN, A. R., 1988 - Geochemistry, mineralogy and petrology of the Brockman rare metals deposit, Kimberley, Western Australia. *CSIRO Interim Report*.
46. GALLAGHER, W. S., McMAGH, P. I., & SERGIADES, F. R., 1970 - Durack Range Prospect, Western Australia. Australian Anglo American Limited D 8108, 7 pp.
47. GARDENER, J. E. F., 1960 - Halls Creek area, airborne radiometric survey, Western Australia, 1959. *Bureau of Mineral Resources, Australia, Record* 1960/46, 5 pp.
48. GARDENER, J. E. F., 1961 - Halls Creek area airborne radiometric survey, Western Australia, 1960. *Bureau of Mineral Resources, Australia, Record* 1961/82, 5 pp.
49. GEMUTS, I., 1963 - Preliminary report on copper mineralisation in the Duffers Limestone, near Halls Creek, Kimberley Goldfield. *Western Australia Geological Survey, Record* 1963/28.
50. GEMUTS, I., & SMITH, J. W., 1968 - Gordon Downs, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SE/52-10, 23 pp.
51. GIBSON, B. G., & CLARKE, C. J., 1979-1984 - Lamboo Sill platinum exploration by Gencor (Australia) Pty. Ltd., Union Corporation (Australia) Pty. Ltd. & Pontifex and Associates Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1815, Microfilm roll 567 - M2522/2, 218 pp.
52. GOODEVE, P. E., 1955 - Airborne scintillometer survey, Halls Creek-Wyndham region, Western Australia, June-September, 1954. *Bureau of Mineral Resources, Australia, Record* 1955/108.
53. HERBERT, H. K., 1971 - The geology of the Ilmars Cu-Pb-Zn occurrence, East Kimberley, Western Australia. MSc. thesis, University of Western Australia, Australia (unpublished), 150 pp.
54. HURSBURGH, D. M., 1977 - Saunders Creek uranium exploration by BP Minerals Australia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 839, Microfilm roll 228 - M2261, 34 pp.
55. HUTTON, G. J., 1978 - Halls Creek copper-zinc exploration by Aquitaine Australia Minerals Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 747, Microfilm roll 216 - M2433, 19 pp.
56. INTERNATIONAL NICKEL AUSTRALIA LTD., 1973-1974 - Saunders Creek copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1673, Microfilm roll 508 - M1772, 24 pp.
57. INTERWEST LTD., 1983-1985 - Halls Gully gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4477, Fiche 6167.
58. INTERWEST LTD., 1983-1987 - Poverty Gully gold/tin/base metals exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4398, Fiche 5952.

59. KILE, M. G., & HIGGINS, M. L., 1976-1977 - Twin Hills copper-zinc exploration by Shell Minerals Exploration Australia Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 746, Microfilm roll 216 - M2326, 126 pp.
60. KING MINING CORPORATION LTD., 1986-1988 - Mount Bradley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3575, Fiche 3725-3727 - M4509.
61. LIENA PTY. LTD., & AUSTRALIAN UNITED GOLD NL., 1984-1988 - Ruby Queen/Old Halls Creek gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4559, Fiche 6378-6379.
62. MAZZONI, P. P., 1976-1977 - Saunders Creek base metals exploration by Western Mining Corporation Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 745, Microfilm roll 216 - M2154, 17 pp.
63. MCGAIN, A., HALLOF, P. G., DONOVAN, P. R., ERSKINE, J., FIDLER, R. W., GOSLING, T. M., BURNSIDE, E., BURT, D., HART, J., & SMITH, R. J., 1968-1971 - Antrim copper exploration by Metals Exploration NL. & other companies. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 733, Microfilm roll 214 - M295, 288 pp.
64. MERCER, C. R., 1961 - Results of drilling at Saunders Creek, near Halls Creek, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1961/39, 4 pp.
65. METALS MINIERE EXPLORATION PTY. LTD., URANERZBERGBAU GMBH CO., & URANERZ (AUSTRALIA) PTY. LTD., 1971-1979 - Kimberley gold field uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1168, Microfilm roll 294 - M648/1, 329 pp.
66. MINPLEX RESOURCES PTY. LTD., 1983-1984 - Koongie Park North copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3097, Fiche 2665 - M3511.
67. MORGAN, K. H., 1963 - Hydrogeology of the Gordon Downs 1 : 250 000 Sheet, Kimberley Division, Western Australia. *Western Australia Geological Survey, Record* 1963/12.
68. MULLER, D. W., COWAN, B. M., WILKINSON, D. P., 1977-1978 - Palm Creek copper-zinc exploration by Samantha Mines Pty Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 631, Microfilm roll 196 - M2132, 18 pp.
69. NEWTON-SMITH, J., 1973a - Duffers Range copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/P, Microfilm roll 194 - M1181/16, 3 v.
70. NEWTON-SMITH, J., 1973b - Campbell's prospect gold exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/N, Microfilm roll 194 - M1181/14, 3 v.
71. NEWTON-SMITH, J., 1973c - Saunders Creek copper-zinc exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 617/O, Microfilm roll 194 - M1181/15, 3 v.

72. NORTHERN GOLD NL, 1984-1987 - Jubilee Gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3650, Fiche 3978-3979 - M3856.
73. OAKLEY MINING PTY. LTD., 1988-1989 - Halls Creek gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4056, Fiche 4883 - M6211.
74. ONE HUNDRED AND TWENTY FIVE NOMINEES PTY. LTD., 1979-1985 - White Elvire gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4485, Fiche 6185.
75. O'SHEA, P. J., BINNS, M. J., JOASS, G. G., MARX, M. R., & PEMBERTON, M., 1978-1983 - Saunders Creek uranium/diamond exploration by Mobil Energy Minerals Aust. Inc. & Stockdale Prospecting Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1691, Microfilm roll 516 - M2411/3, 157 pp.
76. OVERLAND ENTERPRISE PTY. LTD., ANALABS LTD., & COMLABS PTY. LTD., 1983-1984 - Frog Creek tungsten exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1839, Microfilm roll 569 - M3519, 6 pp.
77. PETERSEN, G. N., 1981-1983 - Gordon Downs diamond exploration by BHP Minerals Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1658, Microfilm roll 506 - M3596, 40 pp.
78. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1963-1973 - Kimberley mineral fields exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/A, Microfilm rolls 123-131 - M67/88 & Item 251/E, Microfilm rolls 123-131 - M67/92: 6150 pp.
79. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1965 - Ding Dong Downs lead-copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bp, Microfilm roll 123 - M67/41.
80. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1966 - Saunders Creek copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/br, Microfilm roll 126 - M67/43.
81. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1967a - Gentle Annie copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bs, Microfilm rolls 126-127 - M67/44.
82. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1967b - Panton River copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cl, Microfilm roll 127 - M67/63.
83. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1969a - Bullman copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bt, Microfilm rolls 126-127 - M67/45.
84. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1969b - Ruby Queen copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bx, Microfilm rolls 126-127 - M67/49.

85. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1964-1970 - Ilmars Prospect and Little Mt Isa copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bv, Microfilm rolls 125-126 - M67/47.
86. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965 - Five Mile Gossan nickel-copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bq, Microfilm roll 123 - M67/42.
87. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965-1966 - Brim Yard copper exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bu, Microfilm roll 127 - M67/46.
88. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965-1969a - Koongie Park uranium/lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/by, Microfilm rolls 126-127 - M67/50.
89. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965-1969b - Castle Creek copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/ca, Microfilm rolls 126-127 - M67/52.
90. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965-1970 - Halls Creek and Golf Course copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bz, Microfilm rolls 126-127 - M67/51.
91. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1965-1971 - Moola Bulla copper-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/cb, Microfilm rolls 126-127 - M67/53.
92. PICKANDS MATHER & CO. INTERNATIONAL LTD., 1968-1970 - Sophie Downs and Armanda Wedge copper-lead-zinc exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/bw, Microfilm rolls 125-127 - M67/48.
93. PNC EXPLORATION (AUSTRALIA) PTY. LTD., 1984-1986a - Sophie Downs uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2250, Fiche 775 - M4289/2.
94. PNC EXPLORATION (AUSTRALIA) PTY. LTD., 1984-1986b - McClintock Range uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2252, Fiche 777 - M4289/4.
95. PNC EXPLORATION (AUSTRALIA) PTY. LTD., 1985-1987 - McClintock Range uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3459, Fiche 3511-3515 - M4289/1.
96. PNC EXPLORATION (AUSTRALIA) PTY. LTD., 1987-1989 - Tanami gold/REE/uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4083, Fiche 4940.
97. QUATERMAINE, A., 1986-1988 - D D Prospect gold/rare earth elements exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3714, Fiche 4090 - M5358.

98. RAMSDEN, A. R., RENCH, D. H., & CHALMERS, D. I., (in press) - The volcanic-hosted rare-metals deposit at Brockman, Western Australia: Part III - Mineralogy and geochemistry of the Niobium Tuff. *Mineralium Deposita*.
99. RATTIGAN, J. H., & CLARK, A. B., 1954-1955 - East Kimberley uranium exploration by Rio Tinto Finance and Exploration Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 395, Microfilm roll 165 - M647, 27 pp.
100. RILEY, R. J., HIGGINS, M.C., & MATHISON, C., 1975-1977 - Duffer Range copper-zinc exploration by Shell Minerals Exploration (Australia) Pty. Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1976, Microfilm roll 589 - M2255, 284 pp.
101. RIRIE, G. T., 1989. Evaporites and strata-bound tungsten mineralization. *Geology*, 17, 139-143.
102. RIRIE, G. T., 1990 - Reply on "Evaporites and strata-bound tungsten mineralization". *Geology*, 18, 189.
103. ROEBUCK RESOURCES NL., 1986-1988 - Long Shot gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3477, Fiche 3555 - M4481.
104. RUKER, R. A., 1961 - The Saunders Creek radioactive prospect, Halls Creek district, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1961/103, 21 pp.
105. SAMPEY EXPLORATION PTY. LTD., 1980-1981 - Ruby Plains gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2825, Fiche 2255 - M2674.
106. SAMPSON, P. G., DOW, J. A. S., & BOWD, G. W., 1980-1982 - Gentle Annie copper-zinc exploration by Newmont Holdings Pty. Ltd. & other companies. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1537, Microfilm roll 479 - M2736, 123 pp.
107. SMITH, J. W., 1963 - Explanatory notes to accompany Gordon Downs 1 : 250 000 Sheet SE/52-10, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1963/120.
108. SPAARGAREN, F. A., RATTEW, A. R., DOWSE, R. K., FINNEY, W. A., DAVIES, H., & NEWTON-SMITH, J., 1973-1975 - Halls Creek copper-lead-zinc/tungsten exploration by Australian Anglo American Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 263, Microfilm roll 134 - M1182, 145 pp.
109. STOCKDALE PROSPECTING LTD., 1987-1988 - Linnekar diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3752, Fiche 4150.
110. STOCKDALE PROSPECTING LTD., 1989-1990 - Ruby Plains lead-zinc/gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4672, Fiche 6621-6622.
111. TAYLOR, W. R., PAGE, R. W., ESSLEMONT, G., ROCK, N. M. S., & CHALMERS, D. I., (in press) - The volcanic-hosted rare-metals deposit at Brockman, Western Australia: Part II - Volcanic environment, geochronology and petrography of the Brockman alkaline volcanics. *Mineralium Deposita*.
112. TROY EXPLORATION NL., 1987-1990 - Eldridge diamond/gold/base metals exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4734, Fiche 6810-6811.

113. TRUDU, A. G., 1990 - Comment on "Evaporites and strata-bound tungsten mineralization". *Geology*, 18, 188-189.
114. TURNOCK, K. S., 1993 - Structure and metamorphism of the Duffers Ranges area, East Kimberley, Western Australia. MSc. (Prelim.) thesis, Monash University, Australia (unpublished), 108 pp.
115. UNION OIL DEVELOPMENT CORPORATION., 1980-1986 - Halls Creek tungsten exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3836, Fiche 4327-4340 - M2896/1.
116. UNITED URANIUM NL., 1959-1962 - Glenhill/Nicholson Plains uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2995, Fiche 2475- M41.
117. URANERZ (AUSTRALIA) PTY. LTD., 1978-1980 - TR 7052H, MC 80/6540 - MC 80/6548 - Saunders Creek uranium exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1254, Microfilm roll 411 - M2610/1, 30 pp.
118. WALPOLE, B. P., & PRICHARD, C. E., 1958 - Report on an inspection of the Halls Creek uranium prospect. *Bureau of Mineral Resources, Australia, Record* 1958/79, 7 pp.
119. WEST COAST HOLDINGS LTD., 1986-1987 - Palm Creek carbonatite exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3357, Fiche 3229 - M4922.
120. WESTERN MINING CORPORATION LTD., 1980-1981 - Elvire River gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2120, Fiche 445 - M2650/1.
121. WESTERN MINING CORPORATION LTD., 1981-1982 - Panton River diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 1557, Microfilm roll 482 - M2650/2, 16 pp.
122. WESTERN MINING CORPORATION LTD., 1983-1985 - Gordon Downs diamond exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 2450, Fiche 1205-1206.
123. YATES, K. R., & PONTIFEX, I. R., 1973 - Geological investigations of niobium-bearing rocks in Temporary Reserve 5715H, Halls Creek, Western Australia, for Trend Exploration Pty. Ltd. Open File, Western Australia Department of Mines, 23 pp.
124. YNEMA, M. H., 1983-1985 - Three Sisters gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4487, Fiche 6187-6188.
125. YNEMA, M. H., 1983-1990 - Mount Bradley gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4486, Fiche 6186.
126. ZANEX LIMITED., 1985-1986 - Old Halls Creek alluvial gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 3450, Fiche 3498 - M4658.

**Index B₂ - references by commodities pertaining to the Gordon Downs
1 : 250 000 Sheet area (SE/52-10)**

Base metals: 7, 8, 11, 23, 36, 58, 62, 78, 112	Nickel: 86
Copper: 10, 15, 22, 26, 40, 41, 42, 49, 53, 55, 56, 59, 63, 66, 68, 69, 71, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 100, 106, 108	Platinum-group elements: 51
Diamond: 12, 13, 75, 77, 109, 112, 121, 122	Rare-earth elements: 16, 19, 20, 32, 35, 45, 96, 97, 98, 111, 119, 123
Gold: 2, 3, 4, 5, 6, 8, 9, 11, 17, 21, 23, 29, 37, 38, 39, 43, 44, 57, 58, 60, 61, 65, 70, 72, 73, 74, 96, 97, 103, 105, 110, 112, 120, 124, 125, 126	Silver: 3
Hydrogeology: 1, 33, 67	Tin: 18, 58
Lead: 10, 26, 42, 53, 78, 79, 81, 82, 83, 84, 88, 89, 92, 108, 110	Tungsten: 18, 76, 101, 102, 108, 113, 115
Molybdenum: 18	Uranium: 12, 13, 14, 21, 25, 28, 32, 34, 36, 42, 47, 48, 52, 54, 75, 88, 93, 94, 95, 96, 97, 99, 104, 116, 117, 118
	Zinc: 10, 15, 26, 40, 41, 42, 53, 55, 56, 59, 66, 68, 69, 71, 78, 79, 81, 82, 83, 84, 85, 88, 89, 90, 91, 92, 100, 106, 108, 110

**Index B₃ - references by location/prospect name pertaining to the Gordon Downs
1 : 250 000 Sheet area (SE/52-10)**

Antrim: 63	Elvire River: 120
Armanda Wedge: 92	Five Mile Bore: 27
Birindudu: 34	Five Mile Gossan: 86
Black Elvire River: 23	Flora Valley Station: 1
Brim Yard: 87	Frog Creek: 76
Brockman: 16, 19, 20, 35, 45, 98, 111	Gentle Annie: 6, 81, 106
Bullman: 83	Glenhill: 117
Burks Park: 12	Golf Course: 90
Butcher Creek: 13	Gordon Downs Sheet area: 14, 22, 25, 28, 50, 67, 77, 100, 107, 122
Campbells: 70	Gordon Downs Station: 1
Castle Creek: 89	Halls Creek: 7, 15, 32, 37, 47, 48, 49, 52, 55, 73, 90, 108, 115, 118, 123
Coolibah Bore: 8	Halls Gully: 57
D D: 97	Ilmars: 53, 85
Darcys: 5, 29	Jubilee: 72
Ding Dong Downs: 79	Killi Killi: 21
Duffers Range: 69, 100, 114	Koongie Park: 3, 10, 40, 88
Durack Range: 46	
Eldridge: 112	

**Index B3 - references by location/prospect name pertaining to the Gordon Downs
1 : 250 000 Sheet area (SE/52-10) continued**

Koongie Park North: 66	Palm Well: 18
Koongie Park Rockhole: 9	Poverty Gully: 58
Lamboo Sill: 51	Prospect Creek: 44
Larranganni Bluff: 17	Reform: 36
Linnekar: 109	Robin Soak: 18
Little Mount Isa: 11, 85	Ruby Creek: 37
Long Shot: 103	Ruby Plains: 105, 110
Mary River: 39	Ruby Queen: 61, 84
McClintock Range: 94, 95	Saunders Creek: 42, 54, 56, 62, 64, 71, 75, 80, 104, 117
Moola Bulla: 33, 91	Sophie Downs: 26, 30, 41, 92, 93
Mount Coghlan: 44	Three Sisters: 124
Mount Bradley: 2, 43, 60, 125	Twelve Mile: 38
Nicholson Station: 1	Twin Hills: 59
Nicholson Plains: 116	White Elvire: 74
Old Halls Creek: 61, 126	Woodwards Creek: 44
Panton River: 82, 121	
Palm Creek: 68, 119	

Index C - general references pertaining to the East Kimberley

(note: some important references relating to the West Kimberley are also included in this index)

A.A.O. (Associated Australian Oilfields NL.), 1972 - Final report, Billiluna-Helena aeromagnetic survey. Bureau of Mineral Resources Australia Petroleum Search Subsidy, Unpublished Acts Report File 71/422.

A.A.P. (Australian Aquitaine Petroleum Pty. Ltd.), 1966 - Point Moody No. 1, well completion report. Bureau of Mineral Resources Australia Petroleum Search Subsidy, Unpublished Acts Report File 65/4174.

A.A.P. (Australian Aquitaine Petroleum Pty Ltd), 1969 - Well-completion report, Wilson Cliffs No. 1. Bureau of Mineral Resources Australia Petroleum Search Subsidy, Unpublished Acts Report File 68/2011.

A.A.R. (Associated Australian Resources), 1974 - Final Report, Thornton seismic survey. Bureau of Mineral Resources Australia Petroleum Search Subsidy, Unpublished Acts Report File 72/3362.

ALLEN, A. D., 1965 - The hydrogeology of the Lansdowne and Mount Ramsay 1 : 250 000 geological sheets, Kimberley Divisions, Western Australia. *Western Australia Geological Survey, Record 1965/9.*

ALLEN, A. D., 1966b - The hydrogeology of the Kimberley Plateau. *Western Australia Geological Survey, Record 1966/16.*

ALLEN, A. D., 1966c - Outline of the hydrology and hydrogeology of the Kimberley Plateau, Kimberley Division, Western Australia. *Western Australia Geological Survey, Hydrology Report 250.*

ALLEN, R., 1985a - Regional metamorphism of the Halls Creek Mobile Zone, East Kimberley, Western Australia. In **TECTONICS AND GEOCHEMISTRY OF EARLY TO MIDDLE PROTEROZOIC FOLD BELTS**. Conference on Tectonics and Geochemistry of Early to Middle Proterozoic Fold Belts, Darwin, Northern Territory, 1985. Program and Abstracts, *Bureau of Mineral Resources, Australia, Record* 1985/28, 3 pp.

ALLEN, R., 1985b - Geochemistry of the volcanic rocks of the Halls Creek Mobile Zone, East Kimberley, Western Australia. In **TECTONICS AND GEOCHEMISTRY OF EARLY TO MIDDLE PROTEROZOIC FOLD BELTS**. Conference on Tectonics and Geochemistry of Early to Middle Proterozoic Fold Belts, Darwin, Northern Territory, 1985. Program and Abstracts, *Bureau of Mineral Resources, Australia, Record* 1985/28, 1pp.

ALLEN, R., 1988 - Relationship of thermal evolution to tectonic processes in a Proterozoic fold belt: Halls Creek mobile zone, east Kimberley. Ph.D. thesis, The University of Adelaide, Australia (unpublished).

ANALABS, 1985 - Geochemical evaluation of eleven wells in the Bonaparte Gulf Basin of Western Australia. Western Australia Geological Survey, S-series Open File microfiche BPG 10/A4/1.

ANDREW, R. L., 1990 - Cummins Range Carbonatite. In HUGHES, F. E. (Editor) - **GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA**. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 711-713.

ANDREW, R. L., RICHARDS, M. N., JAQUES, A. L., KNUTSON, J., & TOWNEND, R., 1986 - The Cummins Range carbonatite, Western Australia. In **FOURTH INTERNATIONAL KIMBERLITE CONFERENCE**, Perth, 1986. *Geological Society of Australia, Abstracts*, 16, 12-14.

ATKINSON, W. J., HUGHES, F. E., & SMITH, C. B., 1984a - A review of the kimberlitic rocks of Western Australia. In KORNPROBST, J. (Editor) - **KIMBERLITES AND RELATED ROCKS**. *Elsevier, Amsterdam*, 195-224.

ATKINSON, W. J., SMITH, C. B., & BOXER, G. L., 1984b - The discovery and evaluation of the Ellendale and Argyle lamproite diamond deposits, Kimberley Region, Western Australia. *Society of Mineral Economics, Conference, Denver*, 1984. Abstracts.

ATKINSON, W. J., SMITH, C. B., DANCHIN, R. V., & JANSE, A. J. A., 1990 - Diamond deposits of Australia. In HUGHES, F. E. (Editor) - **GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA**. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 69-76.

BEERE, G. M., & MORY, A. J., 1986 - Revised stratigraphic nomenclature for the onshore Bonaparte and Ord Basins, Western Australia. *Western Australia Geological Survey, Record* 1986/5.

BENNETT, R., & GELLATLY, D. C., 1970 - Rb-Sr age determinations of some rocks from the West Kimberley region, Australia. *Bureau of Mineral Resources, Australia, Record* 1970/20, 14 pp.

BERLIAT, K., 1954 - Report on water supply on Kimberley cattle stations. *Western Australia Geological Survey, Annual Report* 1951, 28-32.

BERLIAT, K., 1956 - Further report on water supply for East Kimberley cattle stations. *Western Australia Geological Survey, Annual Report* 1953, 21-22.

BIGG-WITHER, A. L., 1963 - Compilation and review of the geophysics of the Bonaparte Gulf Basin, 1962. *Bureau of Mineral Resources, Australia, Record* 1963/165.

BILLITON AUSTRALIA., 1987-1988 - Koongie Park copper-lead-zinc/gold exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4303, Fiche 5646 - M1168/5.

BILLITON AUSTRALIA., 1987-1991 - Little Mount Isa gold/base metal exploration. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 4770, Fiche 6863.

BLAIN, C. F., 1967 - Petrology and mineralogy of the Bow River copper-nickel occurrence. BSc.(Hons.) thesis, University of Western Australia, Australia (unpublished).

BLAKE, D. H., 1991a - Notes on the geology of the Halls Creek 1 : 100 000 Sheet area, East Kimberley, Western Australia: Results of 1990 fieldwork. *Bureau of Mineral Resources, Australia, Record* 1991/94, 12 pp.

BLAKE, D. H., 1991b - National Geoscience Mapping Accord: Preliminary results of the Kimberley-Arunta project. *BMR Research Newsletter*, 14, 9-12.

BLAKE, D. H., & HOATSON, D. M., (in press) - Granite, gabbro, and migmatite field relationships in the Proterozoic Lamboo Complex of the East Kimberley region, Western Australia. *AGSO Journal of Australian Geology and Geophysics*.

BLAKE, D. H., HODGSON, I. M., & MUHLING, P. C., 1973 - Geology of The Granites and Precambrian parts of the Billiluna, Lucas and Stansmore 1 : 250 000 sheet areas, Northern Territory and Western Australia. *Bureau of Mineral Resources, Australia, Record* 1973/171.

BLAKE, D. H., HODGSON, I. M., & MUHLING, P. C., 1979 - Geology of The Granites-Tanami region, Northern Territory and Western Australia. *Bureau of Mineral Resources, Australia, Bulletin* 197, 91 pp.

BLAKE, D. H., PASSMORE, V. L., & MUHLING, P. C., 1977 - Billiluna, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SE/52-14, 28 pp.

BLATCHFORD, T., 1921 - Interim report on the occurrence of glance pitch near the junction of the Negri and Ord Rivers known as 'Oake's Find'. *Western Australia Geological Survey, Annual Report* 1921, 20-22.

BLATCHFORD, T., 1927a - Geological observations between the Pentecost and King Rivers, then eastwards to Argyle Station. *Western Australia Geological Survey, Annual Report* 1927, 10-15.

BLATCHFORD, T., 1927b - The geology of portions of the Kimberley Division, with special reference to the Fitzroy Basin and the possibilities of the occurrence of mineral oil. *Western Australia Geological Survey, Bulletin* 93.

BLATCHFORD, T., 1928 - Geological observations made while travelling in the West Kimberley up the valleys lying between the Pentecost and King Rivers, then eastwards across the Dunham and Ord Rivers as far as the Argyle Station and Behn River. *Western Australia Geological Survey, Annual Report* 1927.

- BLOCKLEY, J. G., 1971 - The lead, zinc and silver deposits of Western Australia. *Geological Survey of Western Australia, Minerals Resources Bulletin* 9.
- BOFINGER, V. M., 1967a - Geochronology in the East Kimberley region, Western Australia. *Australian and New Zealand Association for the Advancement of Science, 39th Congress, Abstracts, Part Item*, 110-111.
- BOFINGER, V. M., 1967b - Geochronology of the east Kimberley area of Western Australia. Ph.D. thesis, Australian National University, Australia (unpublished), 167 pp.
- BOXER, G. L., & JAQUES, A. L., 1990 - Argyle (AK1) diamond deposit. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 697-706.
- BOXER, G. L., LORENZ, V., & SMITH, C. B., 1986 - The geology and volcanology of the Argyle (AK1) lamproite diatreme. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 21-23.
- BOXER, G. L., LORENZ, V., & SMITH, C. B., 1989 - The geology and volcanology of the Argyle (AK1) lamproite diatreme, Western Australia. In ROSS, J., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR COMPOSITION, OCCURRENCE, ORIGIN AND EMPLACEMENT, VOLUME 1. *Geological Society of Australia Special Publication*, 14, 140-152.
- BRADY, T. J., JAUNCY, W., & STEIN, D., 1966 - The geology of the Bonaparte Gulf Basin. *APEA Journal* 1966, 7/11.
- BRIDSON, J. D., 1987 - Louisa Downs Prospect. Helix Resources NL. report. *West Australian Department of Mines*.
- BURBURY, J. E., 1958 - Regional gravity survey, Bonaparte Gulf Basin, north-western Australia, 1957. Report by Mines Administration Pty Ltd for Associated Australian Oilfields NT/2/46.
- BURLINSON, K., 1984 - Exploration for gold at Pine Creek and Tennant Creek, Northern Territory and at Halls Creek, Western Australia, using the fluid inclusion decrepitation technique. Darwin Conference, August, 1984. *Australasian Institute of Mining and Metallurgy, Conference Series*, 13, 373-375.
- BURT, D. R. L., ERSKINE, J., & HART, J., 1970 - Antrim Copper Project. Joint Venture progress report 3, (final report), by Metals Exploration NL., Freeport of Australia Inc., & Australian Anglo American Ltd. CR 70/48, November.
- CARROLL, D., 1947 - Heavy residues of soils from the Lower Ord Valley, Western Australia. *Journal of Sedimentary Petrology*, 187 (1).
- CARTER, J. D., 1975 - Recent exploration for uranium in the Kimberley region. *Western Australia Geological Survey, Annual Report* 1975, 95-108.
- CASEY, J. N., & WELLS, A. T., 1964 - The geology of the northeast Canning Basin, Western Australia. *Bureau of Mineral Resources, Australia, Report* 49.
- CASSIDY, W. A., 1954 - The Wolf Creek, Western Australia, Meteorite Crater. *Journal of the Meteor. Society & Institute of Meteorit., University of New Mexico*, 1(2).

- COATS, R. P., & PREISS, W. V., 1980 - Stratigraphic and geochronological reinterpretation of late Proterozoic glaciogenic sequences in the Kimberley Region, Western Australia. *Precambrian Research*, 13 (2/3), 181-208.
- COLEMAN, J. M., & WRIGHT, L. D., 1978 - Sedimentation in an arid macrotidal alluvial river system - Ord River, Western Australia. *Journal of Geology*, 86, 621-642.
- CRESPIN, I., 1948a - Micropalaeontological examination of rock samples from the Kimberley district, Western Australia. Collected by Dr. F. Reeves. *Bureau of Mineral Resources, Australia, Record* 1948/13.
- CRESPIN, I., 1948b - Report on micropalaeontological examination of rock samples received by Dr. F. Reeves from the Kimberley region, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1948/56.
- CRESPIN, I., 1948c - Micro examination of rock samples from the Kimberley area, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1948/77.
- CROWE, R. W. A., 1973 - BMR Billiluna No. 1 stratigraphic test bore. *Western Australia Geological Survey, Record* 1973/13.
- DALLWITZ, W. B., & ROBERTS, W. M. B., 1960 - Radioactive conglomerate from 130 miles south-southeast of Halls Creek, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1960/3, 5 pp.
- DEAKIN, A. S., & BOXER, G. L., 1989 - Argyle AK1 diamond size distribution: the use of fine diamonds to predict the occurrence of commercial sized diamonds. In ROSS, L., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR MANTLE/CRUST SETTING, DIAMONDS AND DIAMOND EXPLORATION VOLUME 2. *Geological Society of Australia Special Publication*, 14, 1117-1122.
- DEAKIN, A. S., BOXER, G. L., MEAKINS, A. E., HAEBIG, E. A., & LEW, J. H., 1986 - The geology of the Argyle alluvial diamond deposits. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 451-453.
- De HAVELLAND, D. W., 1985 - GOLD & GHOSTS - A PROSPECTORS GUIDE TO METAL DETECTING IN AUSTRALIA AND HISTORY OF THE AUSTRALIAN GOLDFIELDS. VOLUME 1 - WESTERN AUSTRALIA. *Hesperian Press, Western Australia*, 326 pp.
- De HAVELLAND, D. W., 1986 - GOLD & GHOSTS - A PROSPECTORS GUIDE TO METAL DETECTING IN AUSTRALIA AND HISTORY OF THE AUSTRALIAN GOLDFIELDS. VOLUME 2 - WESTERN AUSTRALIA. *Hesperian Press, Western Australia*, 382 pp.
- DERRICK, G. M., 1966a - Geology of the Ashton 1 : 250 000 Sheet area, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1966/81.
- DERRICK, G. M., 1966b - A report on the West Kimberley Hawkstone kyanite deposit, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1966/221.
- DERRICK, G. M., 1969 - Ashton, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SD/52-13, 18 pp.

- DOW, D. B., 1965 - Evidence of a late Precambrian glaciation in the Kimberley region, Western Australia. *Geological Magazine*, 102(5), 407-414.
- DOW, D. B., 1966 - Probable meteorite craters near Cummins Range, Kimberley region of Western Australia. *Bureau of Mineral Resources, Australia, Record* 1966/218.
- DOW, D. B., 1980 - Palaeozoic rocks of the Hardman, Rosewood, and Argyle Basins, East Kimberley region, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1980/54, 27 pp.
- DOW, D. B., & GEMUTS, I., 1969 - Geology of the Kimberley Region, Western Australia: The East Kimberley. *Bureau of Mineral Resources, Australia, Bulletin* 106, 135 pp.
- DREW, G. J., 1986 - A geophysical case history of the AK1 lamproite pipe. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 454-456.
- DRUMMOND, J. M., 1963 - Compilation and review of the geology of the Bonaparte Gulf Basin, 1962. *Bureau of Mineral Resources, Australia, Record* 1963/133.
- DUNNET, D., 1965 - A new occurrence of Proterozoic jellyfish from the Kimberleys, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1965/134.
- DUNNET, D., & PLUMB, K. A., 1964 - Explanatory Notes on the Lissadell 1 : 250 000 Geological Sheet SE/52-2, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1964/70.
- EASTON, W. R., 1922 - Report on north Kimberley District of West Australia. *Department of the North-West, Publication* 3.
- EDGEELL, H. S., 1964 - Palynological age determinations of surface samples of old river gravels from the Mount Ramsay 4-mile sheet. *Palaeontological Report of the Western Australia Geological Survey*, 50/1964.
- EDGERLEY, D. W., & CRIST, R. P., 1974 - Salt and diapiric anomalies in the southeast Bonaparte Gulf Basin. *APEA Journal*, 14 (1), 85-94.
- EDWARDS, A. B., 1943 - Some basalts from the North Kimberley, Western Australia. *Journal of the Royal Society of Western Australia*, 27 (for 1940-42), 79-93.
- EDWARDS, A. B., & CLARKE, E. de C., 1940 - Some Cambrian basalts from the East Kimberleys, Western Australia. *Journal of the Royal Society of Western Australia*, 26, 77-101.
- EDWARDS, D., ROCK, N. M. S., TAYLOR, W. R., GRIFFIN, B. J., & RAMSAY, R. R., - 1992 - Mineralogy and petrology of the Aries diamondiferous kimberlite pipe, central Kimberley Block, Western Australia. *Journal of Petrology*, 33, 1157-1191.
- ERSKINE, J., FIDLER, R., & GOSLING, T., 1970 - Antrim Copper Project. Joint Venture progress report 2, by Metals Exploration NL, Freeport of Australia Inc., & Australian Anglo American Ltd. CR 70/47 (A-D), January-April, 100 pp.
- ETHERIDGE, M. A., RUTLAND, R. W. R., & WYBORN, L. A. I., 1987 - Orogenesis and tectonic process in the early to middle Proterozoic of northern Australia. In KRONER, A. (Editor) - PROTEROZOIC LITHOSPHERIC EVOLUTION. *American Geophysical Union, Washington, D.C.*, 131-147.

- EVERINGHAM, I. B., 1956 - Gravity survey of the Poole Range area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1956/155.
- FIELDING, D. C., & JAKES, A. L., 1986 - Geology, petrology, and geochemistry of the Bow Hill lamprophyre dykes, Western Australia. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 24-26.
- FINUCANE, K. J., 1938b - The Mount Dockrell gold mining centre, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 29.
- FINUCANE, K. J., 1938c - Tin-columbite deposits southeast of Mount Dockrell, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 30.
- FINUCANE, K. J., 1939b - The twelve-mile alluvial workings and Elivie River dredging reserves (893H and 948H), Halls Creek, East Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 42.
- FINUCANE, K. J., 1939c - The Granite Range area, West Kimberley District. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report* 44.
- FINUCANE, K. J., 1953 - The geological structure of the Kimberley region in relation to mineralisation. In EDWARDS, A. B. (Editor) - GEOLOGY OF AUSTRALIAN ORE DEPOSITS, VOLUME 1. Fifth Empire Mining and Metallurgical Congress, 1953. *The Australasian Institute of Mining and Metallurgy, Melbourne*, 271-275.
- FOORD, A. H., 1890 - Description of fossils from the Kimberley District, Western Australia. *Geological Magazine*, 7 (III), 98-100.
- FRASER, A. R., 1973 - A discussion on the gravity anomalies of the Precambrian shield of Western Australia. *Bureau of Mineral Resources, Australia, Record* 1973/105.
- GELLATLY, D. C., 1967 - Orientation geochemical sampling in the Lansdowne Sheet area SE/52-5, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1967/36.
- GELLATLY, D. C., 1968 - Proterozoic palaeocurrent directions in the Kimberley region, northwestern Australia. *Bureau of Mineral Resources, Australia, Record* 1968/141.
- GELLATLY, D. C., 1971a - Bibliography of recent geological work on the Precambrian of the Kimberley region, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1971/2.
- GELLATLY, D. C., 1971b - Possible Archaean rocks of the Kimberley region, Western Australia. *Geological Society of Australia Special Publication* 3, 93-101.
- GELLATLY, D. C., & DERRICK, G. M., 1967 - Lansdowne, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SE/52-5, 28 pp.
- GELLATLY, D. C., DERRICK, G. M., & PLUMB, K. A., 1965 - The geology of the Lansdowne 1 : 250 000 Sheet SE/52-5, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1965/210, 100 pp.
- GELLATLY, D. C., DERRICK, G. M., & PLUMB, K. A., 1968 - Proterozoic palaeocurrent directions in the Kimberley region, northwestern Australia. *Bureau of Mineral Resources, Australia, Record* 1968/141.

- GELLATLY, D. C., DERRICK, G. M., & PLUMB, K. A., 1970 - Proterozoic palaeocurrent directions in the Kimberley region, northwestern Australia. *Geological Magazine*, 107, 249-257.
- GELLATLY, D. C., DERRICK, G. M., & PLUMB, K. A., 1975 - The geology of the Lansdowne 1 : 250 000 sheet area, Western Australia. *Bureau of Mineral Resources, Australia, Report* 152.
- GELLATLY, D. C. & SOFOULIS, J., 1966 - Geology of the Drysdale-Londonderry 1 : 250 000 Sheet area SD/52-5 and 9, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1966/55.
- GELLATLY, D. C. & SOFOULIS, J., 1969 - Drysdale-Londonderry, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SD/52-5 and SD/52-9, 19 pp.
- GEMUTS, I., 1965a - Metamorphism and igneous activity in the Lamboo Complex, East Kimberley area, Western Australia. MSc. thesis, University of Sydney, Australia, 85 pp.
- GEMUTS, I., 1965b - Metamorphism and igneous activity in the Lamboo Complex, East Kimberley area, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1965/242, 85 pp.
- GEMUTS, I., 1965c - Regional metamorphism in the Lamboo Complex, East Kimberley area. *Western Australia Geological Survey Annual Report*, 1964, 36-41.
- GEMUTS, I., 1971 - Metamorphic and igneous rocks of the Lamboo Complex, East Kimberley region, Western Australia. *Bureau of Mineral Resources, Australia, Bulletin* 107, 71 pp.
- GEOPHYSICAL ASSOCIATES PTY. LTD., 1966 - Timor Sea-Joseph Bonaparte Gulf marine gravity and seismic sparker survey, northwest Australia, 1965. *Bureau of Mineral Resources, Australia, Record* 1966/16.
- GLOVER, J. J., RICHARDSON, L. A., & MCGILVRAY, J. P., 1955 - Geological and geophysical report on the Keep River area, Bonaparte Gulf Basin. Report by Mines Administration Pty. Ltd. for Associated Australian Oilfields. NT/BG/20.
- GORDON, F. R., 1963a - Engineering geology of the Ord River main dam site No. 2, Kimberley Division. *Western Australia Geological Survey, Annual Report* 1962, 14 (also GSWA Record 1963/8).
- GORDON, F. R., 1963b - Ord River main dam site No. 2 - design conference. *Western Australia Geological Survey, Record* 1963/25.
- GORDON, F. R., 1964a - Ord River main dam site No. 2, rockfill dam proposal, investigations 1963. *Western Australia Geological Survey, Annual Report* 1963 (also GSWA Record 1964/4).
- GORDON, F. R., 1964b - Diamond Gorge Dam site, geological reconnaissance investigation, 1962. *Western Australia Geological Survey, Record* 1964/22.
- GORDON, F. R., 1965 - Geological investigations at the Ord River main dam site No. 2 in 1964. *Western Australia Geological Survey, Annual Report* 1964, 16-18.
- GORDON, F. R., 1967 - Geological reconnaissance at MacDonald Gorge dam site, West Kimberley. *Western Australia Geological Survey, Annual Report* 1966, 33-35 (also GSWA Record 1966/17).
- GRIFFIN, T. J., 1989 - A major thrust between the Gibb River and Hooper terranes in the King Leopold Orogen, West Kimberley Region. *Western Australia Geological Survey, Report* 26, *Professional Papers*, 69-81.

- GRIFFIN, T. J., & GREY, K., 1990 - King Leopold and Halls Creek Orogens. In GEOLOGY AND MINERAL RESOURCES OF WESTERN AUSTRALIA. *Western Australia Geological Survey, Memoir 3*, 232-255.
- GRIFFIN, T. J., & MYERS, J. S., 1988a - Geological Note - A Proterozoic terrain boundary in the King Leopold Orogen, Western Australia. *Australian Journal of Earth Sciences*, 35, 131-132.
- GRIFFIN, T. J., & MYERS, J. S., 1988b - Reply to discussion - A Proterozoic terrain boundary in the King Leopold Orogen, Western Australia. *Australian Journal of Earth Sciences*, 35, 591-593.
- GRIFFIN, T. J., & TYLER, I. M., 1992 - Geology of the Southern Halls Creek Orogen - A summary of field work in 1992. *Western Australia Geological Survey, Record 1992/17*.
- GRIFFIN, T. J., TYLER, I. M., & PLAYFORD, P. E., (in press) - Lennard River, Western Australia - 1 : 250 000 Geological Series Explanatory Notes, 2nd edition. *Western Australia Geological Survey, Record 1992/5*.
- GRUBB, P. L. C., 1970 - Mineralogy, geochemistry, and genesis of the bauxite deposits on the Gove and Mitchell Plateaux, northern Australia. *Mineralium Deposita*, 5, 248-272.
- GUILLAUME, R. E. F., 1966 - Petroleum geology in the Bonaparte Gulf Basin, Northern Territory. *Eighth Comm. Mining and Metallurgy Congress*, 5, 183-196.
- GUNN, M. J., 1986 - Post-conference excursion guide to the lamproites of the Kimberley region, Western Australia. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Excursion Guide*.
- GUPPY, D. J., 1949 - Resume of activities during the 1948 field season, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1949/12*.
- GUPPY, D. J., 1949 - The geology of the Nerrima structure, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1949/24*.
- GUPPY, D. J., LINDNER, A. W., RATTIGAN, J. H., & CASEY, J. N., 1958 - The geology of the Fitzroy Basin, Western Australia. *Bureau of Mineral Resources, Australia, Bulletin 36*.
- GUPPY, D. J., & MATHESON, R. S., 1949 - Geological reconnaissance in the Mount Ramsay area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1949/48*.
- GUPPY, D. J., & MATHESON, R. S., 1951 - Wolf Creek meteorite crater, Western Australia. *Smithson Report for 1950*, 317-325.
- HAEBIG, E. A., & JACKSON, D. G., 1986 - Geochemical expression of some West Australian kimberlites and lamproites. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 466-468.
- HALLIGAN, R., & HARRIS, J. L., 1980 - Bow River Cu-Ni deposit, Halls Creek Province, Western Australia. *Journal of Geochemical Exploration*, 12 (2/3), 214-217.
- HANCOCK, P. M., 1968 - Location and investigation of Zebra Rock occurrences, East Kimberley region. *Western Australia Geological Survey, Annual Report 1967*, 67-68.

- HANCOCK, S. L., 1991 - Tectonic development of the Lower Proterozoic basement in the Kimberley district of northwestern Western Australia. Ph.D. thesis, University of Adelaide, Australia (unpublished).
- HANCOCK, S. L., & RUTLAND, R. W. R., 1984 - Tectonics of an Early Proterozoic geosuture - the Halls Creek orogenic sub-province, northern Australia. *Journal of Geodynamics*, 1, 387-432.
- HARDMAN, E. T., 1883 - Preliminary report on the geology of part of the Kimberley district, Western Australia. *Western Australia Parliamentary Paper* 23.
- HARDMAN, E. T., 1884 - Report on the geology of the Kimberley district, Western Australia. *Western Australia Parliamentary Paper* 31.
- HARDMAN, E. T., 1885 - Report on the geology of the Kimberley district, Western Australia. *Western Australia Parliamentary Paper* 34.
- HARMS, J. E., 1959 - The geology of the Kimberley Division, Western Australia, and of an adjacent area of the Northern Territory. MSc. thesis, University of Adelaide, Australia (unpublished).
- HARMS, J. E., 1965 - Geology of the Kimberley Division, Western Australia. In McANDREW, J. (Editor) - GEOLOGY OF AUSTRALIAN ORE DEPOSITS, VOLUME 1. Eighth Commonwealth Mining and Metallurgical Congress, 1965. *The Australasian Institute of Mining and Metallurgy, Melbourne*, 66-70.
- HAYS, J., 1968 - Geomorphology. In Upper Palaeozoic rocks, Bonaparte Gulf Basin of northwestern Australia. *Bureau of Mineral Resources, Australia, Bulletin* 97, 138-140.
- HOATSON, D. M., 1984 - Potential for platinum-group mineralisation in Australia. A review. *Bureau of Mineral Resources Australia, Record* 1984/1, 84 pp.
- HOATSON, D. M., 1987 - The geology of platinum-group elements in Australia. In von Gruenewaldt, G., Keays, R. R., & Hoatson, D. M. (Compilers) - PLATINUM-GROUP ELEMENT DEPOSITS. Sydney 6-8 October 1987. *The Earth Resources Foundation Workshop, University of Sydney*, 24 pp.
- HOATSON, D. M., 1990a - Potential for platinum-group element mineralisation. In NATIONAL AGRICULTURAL AND RESOURCE OUTLOOK CONFERENCE 1990 (NAROC '90). Australian Bureau of Agricultural and Resource Economics, 30 January to 1 February 1990, Canberra, 10 pp.
- HOATSON, D. M., 1990b - Platinum group element mineralisation and potential in Australia. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining & Metallurgy, Melbourne, Monograph* 14, 85-98.
- HOATSON, D. M., & GLASER, L. M., 1989 - The geology and economics of platinum-group metals in Australia. *Bureau of Mineral Resources Australia, Resource Report* 5, 81 pp.
- HOBSON, R. A., 1930 - Zebra rock from the East Kimberleys. *Journal of the Royal Society of Western Australia*, 16, 57-70.
- HOLMES, C. H., 1948 - The hidden crater of Wolf Creek. *Walkabout*, November 1948.
- HORWITZ, R. C., 1964 - The geology of the region surrounding the Ord River main dam site, Western Australia. *Western Australia Geological Survey, Record* 1964/18.

HUGHES, F. E., & HARMS, J. E., 1975 - Radioactive King Leopold conglomerate. In KNIGHT, C. L. (Editor) - ECONOMIC GEOLOGY OF AUSTRALIA AND PAPUA NEW GUINEA, VOLUME 1, METALS. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph 5*, 257-259.

JACK, L. L., 1906 - Report on the prospects of obtaining artesian water in the Kimberley District. *Western Australia Geological Survey, Bulletin 25*.

JAQUES, A. L., HAGGERTY, S. E., LUCAS, H., & BOXER, G. L., 1989a - The mineralogy and petrology of the Argyle (AK1) lamproite pipe, Western Australia. In ROSS, J., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR COMPOSITION, OCCURRENCE, ORIGIN AND EMPLACEMENT, VOLUME 1. *Geological Society of Australia Special Publication*, 14, 153-169.

JAQUES, A. L., HALL, A. E., SHERATON, J. W., SMITH, C. B., SUN, S-S., DREW, R., FOUDOULIS, C., & ELLINGSEN, K., 1989b - Composition of crystalline inclusions and C-isotopic composition of Argyle and Ellendale diamonds. In ROSS, J., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR MANTLE/CRUST SETTING, DIAMONDS AND DIAMOND EXPLORATION, VOLUME 2. *Geological Society of Australia Special Publication*, 14, 966-989.

JAQUES, A. L., LEWIS, J. D., & SMITH, C. B., 1986 - The kimberlites and lamproites of Western Australia. *Western Australia Geological Survey, Bulletin 132*.

JAQUES, A. L., LEWIS, J. D., SMITH, C. B., GREGORY, G. P., FERGUSON, J., CHAPPELL, B. W., & McCULLOCH, M. T., 1984 - The diamond-bearing ultrapotassic (lamproite) rocks of the West Kimberley region, Western Australia. In KORNPROBST, J. (Editor) - KIMBERLITES I - KIMBERLITES AND RELATED ROCKS. *Elsevier, Amsterdam*, 1, 225-254.

JAQUES, A. L., SUN, S-S., & CHAPPELL, B. W., 1989c - Geochemistry of the Argyle (AK1) lamproite pipe, Western Australia. In ROSS, J., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR COMPOSITION, OCCURRENCE, ORIGIN AND EMPLACEMENT, VOL. 1. *Geological Society of Australia Special Publication*, 14, 170-188.

JAQUES, A. L., WEBB, A. W., FANNING, C. M., BLACK, L. P., PIDGEON, R. T., FERGUSON, J., SMITH, C. B., & GREGORY, G. P., 1984 - The age of the diamond-bearing pipes and associated leucite lamproites of the West Kimberley region, Western Australia. *BMR Journal of Australian Geology and Geophysics*, 9, 1-7.

JONES, F. H., 1938 - The Mount Amherst gold and silver-lead deposits. *Aerial, Geological and Geophysical Survey of Northern Australia. Western Australia, Report 31*.

JONES, P. J., 1958 - Preliminary report on micropalaeontology of samples from the Bonaparte Gulf Basin. *Bureau of Mineral Resources, Australia, Record 1958/26*.

JORGENSEN, G. C., DENDLE, P. K., ROWLEY, M., & LEE, R. J., 1990 - Sorby lead-zinc-silver deposit. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph 14*, 1097-1101.

KAULBACK, J. A., & VEEVERS, J. J., 1969 - Lower Palaeozoic geology of the Bonaparte Gulf Basin. *Bureau of Mineral Resources, Australia, Report 109*.

- LAPAZ, L., 1954 - Meteoritic material from the Wolf Creek, Western Australia, Crater. *Journal of the Meteor. Society & Institute of Meteorit., University of New Mexico*, 1(2).
- LARCOMBE, C. O. G., 1925 - Rock specimens from Ord River and Oakover River. *Western Australia Geological Survey, Annual Report 1924*, 19.
- LARCOMBE, C. O. G., 1927 - Some rocks from 4 miles east of Argyle Station, Ord River, King District, Kimberley. *Western Australia Geological Survey, Annual Report 1926*, 23-24.
- LAWS, R., 1981 - The petroleum geology of the onshore Bonaparte Basin. *APEA Journal*, 21, 5-15.
- LAWS, R. A., & BROWN, R. S., 1976 - Petroleum geology of the southeastern Bonaparte Gulf Basin. In LESLIE, R. B., EVANS, H. J., & KNIGHT, C. L. (Editors) - ECONOMIC GEOLOGY OF AUSTRALIA AND PAPUA NEW GUINEA. Volume 3. Petroleum. *The Australian Institute of Mining and Metallurgy, Monograph 7*, 200-208.
- LE BLANC, M. C., 1964 - Completion report, Bonaparte Well No. 1 P. E. 127H, Western Australia. Report to Alliance Oil Development Australia NL.
- LE BLANC, M. C., 1965 - Alliance Oil Development Australia NL. completion report. Bonaparte Well No. 2 P. E. 127H, Western Australia. Report to Alliance Oil Development Australia NL.
- LEWIS, J. D., 1990a - Diatremes. In GEOLOGY AND MINERAL RESOURCES OF WESTERN AUSTRALIA. *Western Australia Geological Survey, Memoir 3*, 565-589.
- LEWIS, J. D., 1990b - Diamonds. In GEOLOGY AND MINERAL RESOURCES OF WESTERN AUSTRALIA. *Western Australia Geological Survey, Memoir 3*, 639-643.
- LEWIS, J. H., & WEBSTER, K. C., 1964 - Report of engineering investigations, Ord irrigation project. Department of Western Australia Public Works.
- LOUGHNAN, F. C., & ROBERTS, F. I., 1990 - Composition and origin of the 'zebra rock' from the east Kimberley region of Western Australia. *Australian Journal of Earth Sciences*, 37, 201-205.
- LOUTHEAN, R., 1989 - Register of Australian Mining 1989/90. *Resource Information Unit Limited, Perth*.
- LOUTHEAN, R., 1990 - Register of Australian Mining 1990/91. *Resource Information Unit Limited, Perth*.
- LOUTHEAN, R., 1991 - Register of Australian Mining 1991/92. *Resource Information Unit Limited, Perth*.
- LOUTHEAN, R., 1992 - Register of Australian Mining 1992/93. *Resource Information Unit Limited, Perth*.
- LOUTHEAN, R., & MEIKLEJOHN, F., 1991 - Sally Malay opens up base metals potential in the East Kimberley. *Minerals Gazette*, November 1991, 6.
- MACLEOD, W. N., 1963 - The iron ore deposits near Pompey's Pillar, Kimberley Division. *Western Australia Geological Survey, Record 1963/14*.
- MAHONY, D. J., 1922 - Report on oil prospects near Ord-Negri River Junction, East Kimberleys. *Geological Survey of Western Australia, File 290/22*.

- MAITLAND, A. G., 1902 - Kimberley. *Geological Survey of Western Australia, Annual Report 1901*.
- MARSTON, R. J., 1979 - Copper mineralization in Western Australia. *Western Australia Geological Survey, Mineral Resources Bulletin 13*.
- MARSTON, R. J., 1984 - Nickel mineralization in Western Australia. *Western Australia Geological Survey, Mineral Resources Bulletin 14*.
- MASHAM, J. S., HARRIS, J. L., WEBB, J. E., EL-ANSARY, M., PATON, G. F., & HERBERT, H. K., 1963-1973 - Kimberley mineral fields exploration by Pickands Mather & Co. International Ltd. Western Australia Geological Survey, Unpublished Report. Open file - GSWA Item 251/E, Microfilm rolls 123, 125-128, 130, 131 - M67, various paging.
- MATHESON, R. S., 1949 - Geological reconnaissance in the Mt. Ramsay area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1949/48*.
- MATHESON, R. S., & GUPPY, D. P., 1949 - Geological reconnaissance in the Mount Ramsay area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1949/48*.
- MATHESON, R. S., & TEICHERT, C., 1946 - Geological reconnaissance in the eastern portion of the Kimberley Division, Western Australia. *Western Australia Geological Survey, Annual Report 1945, 73-87*.
- MATHUR, S. P., & SHAW, R. D., 1982 - Australian orogenic belts: Evidence for evolving plate tectonics. *Earth Evolution Sciences*, 4, 281-308.
- MCCULLOCH, M. T., 1987 - Sm-Nd isotopic constraints on the evolution of Precambrian crust in the Australian continent. In KRONER, A. (Editor) - PROTEROZOIC LITHOSPHERIC EVOLUTION. Geodynamics Series 17, *American Geophysics Union, Washington DC*, 115-130.
- MCDOWALL, A. J., & LEE, L. O., 1965 - Marine seismic refraction survey, West Bonaparte Gulf, Australia. Interpretation report. Report by Geophysical Services International Ltd. for Anacapa Corp.
- MCGAIN, A., 1968 - Antrim Copper Project, progress report 1, by Metals Exploration NL. & Freeport of Australia Inc. CR 68/035, December, 24 pp.
- McKINNON, A., 1988 - East Kimberley begins to yield its riches. *Gold Gazette*, August 1988, 22-23.
- McNEILL, R. D., 1966 - Mount Angelo copper prospect, East Kimberleys, Western Australia. *Proceedings of the Australasian Institute of Mining and Metallurgy*, 218, 1-7.
- MEAKINS, A. E., 1983 - Geology and genesis of the Argyle alluvial diamond deposits, Kimberley region, Western Australia. In DAVY, R., BUTT, C. R. M., & BALLINGER, T. A. (Editors) - GEOCHEMICAL EXPLORATION IN ARID AND DEEPLY WEATHERED ENVIRONMENTS. *Association of Exploration Geochemists, Regional Meeting, Perth, Western Australia, 1983, Abstracts*, 54-56.
- MORY, A. J., 1988 - Regional geology of the offshore Bonaparte Basin. In PURCELL, P. G., & PURCELL, R. R. (Editors) - THE NORTH WEST SHELF, AUSTRALIA. *Petroleum Exploration Society of Australia, North West Shelf Symposium, Perth, Western Australia, Proceedings, 1988*, 225-235.

- MORY, A. J., & BEERE, G. M., 1985a - Palaeozoic stratigraphy of the Ord Basin, Western Australia and Northern Territory. *Western Australia Geological Survey, Professional Papers for 1983, Report 14*, 36-45.
- MORY, A. J., & BEERE, G. M., 1985b - Geology of the onshore Bonaparte and Ord Basins in Western Australia. *Western Australia Geological Survey, Bulletin 134*.
- NEIL-SMITH, R., 1898 - The state of mining in the Kimberley District. *Western Australia Geological Survey, Bulletin 2*, 7.
- NEVILL, M. W., 1974 - The geology and mineralization of the Corkwood Prospect area, Lamboo Complex, East Kimberley. BSc.(Hons.) thesis, University of Western Australia, Australia (unpublished).
- NOAKES, L. C., OPIK, A. A., & CRESPIAN, I., 1952a - Bonaparte Gulf Basin, North Western Australia. *19th Congress Int. Géol., Symposium Gond. Ser.*, 91-106.
- NOAKES, L. C., OPIK, A. A., & CRESPIAN, I., 1952b - Bonaparte Gulf Basin, northwestern Australia. A stratigraphical summary with special reference to the Gondwana System. 19th International Geological Congress, Algier, 1950. *Symposium sur les series de Gondwana*, 91-106.
- O'NEILL, H. St C., JAKES, A. L., SMITH, C. B., & MOON, J., 1986 - Diamond-bearing peridotite xenoliths from the Argyle (AK1) Pipe. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 300-302.
- OGASAWARA, M., 1988a - Granite rocks of the Halls Creek orogenic domain. Ph.D. thesis, University of Adelaide, Australia (unpublished).
- OGASAWARA, M., 1988b - Geochemistry of the Early Proterozoic granitoids in the Halls Creek Orogenic Subprovince, northern Australia. *Precambrian Research*, 40/41, 469-486.
- OLLIER, C. D., GAUNT, G. F. M., & JURKOWSKI, I., 1988 - The Kimberley Plateau, Western Australia. A Precambrian erosion surface. *Z. Geomorph.*, 32, 239-246.
- PAGE, R. W., 1976 - Reinterpretation of isotopic ages from the Halls Creek Mobile Zone, northwestern Australia. *BMR Journal of Australian Geology and Geophysics*, 1 (1), March, 79-81.
- PAGE, R. W., 1988 - Geochronology of early to middle Proterozoic fold belts in northern Australia: a review. *Precambrian Research*, 40/41, 1-19.
- PAGE, R. W., & HANCOCK, S. L., 1988 - Geochronology of a rapid 1.85-1.86 Ga tectonic transition: Halls Creek Orogen, northern Australia. *Precambrian Research*, 40/41, 447-467.
- PAGE, R. W., McCULLOCH, M. T., & BLACK, L. P., 1984 - Isotopic record of major Precambrian events in Australia. *International Geological Congress, 27th, Moscow, 1984. Proceedings*, 5, 25-72.
- PAGE, R. W., WYBORN, L. A. I., HAZELL, M., & RYBURN, R. J., 1993 - OZCHRON documentation. *AGSO Record 1993/44*.
- PASSMORE, J. R., 1967 - Water supplies in the East Kimberley region. *Western Australia Geological Survey, Record 1967/1*.
- PATERSON, S. J., 1954 - General report of the survey of the Ord-Victoria area: geomorphology. *CSIRO, Australia Land Research Series 4*.

PERRY, W. J., & RICHARDS, R., 1965 - Report on photo-interpretation of the Yampi, Charnley, Prince Regent-Camden Sound, Montague Sound, Ashton, Londonderry-Drysdale, and Mount Elizabeth 1 : 250 000 Sheet areas, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1965/87.

PERRY, W. J., & ROBERTS, H. H., 1968 - Late Precambrian glaciated pavements in the Kimberley region, Western Australia. *Journal of the Geological Society of Australia*, 15 (1), 51-56.

PIDGEON, R. T., SMITH, C. B., & FANNING, C. M., 1986 - The age of kimberlite and lamproite emplacement in Western Australia: Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 136-138.

PIDGEON, R. T., SMITH, C. B., & FANNING, C. M., 1989 - Kimberlite and lamproite emplacement ages in Western Australia. In ROSS, J., & OTHERS (Editors) - KIMBERLITES AND RELATED ROCKS: THEIR COMPOSITION, OCCURRENCE, ORIGIN AND EMPLACEMENT, VOLUME 1. *Geological Society of Australia Special Publication*, 14, 369-381.

PLUMB, K. A., 1968 - Lissadell, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes* SE/52-2, 31 pp.

PLUMB, K. A., 1973 - Late Adelaidean glacial successions of the Kimberley region, northwestern Australia. 2. The age of the Carpentarian - a progress report. *Bureau of Mineral Resources, Australia, Record* 1973/68.

PLUMB, K. A., 1979 - Structure and tectonic style of the Precambrian shields and platforms of northern Australia. *Tectonophysics*, 58, 291-325.

PLUMB, K. A., 1981 - Late Proterozoic (Adelaidean) tillites of the Kimberley-Victoria River region, Western Australia and Northern Territory. In HANBREY, M. J., & HARLAND, W. B. (Editors) - EARTH'S PRE-PLEISTOCENE GLACIAL RECORD. *Cambridge University Press, Cambridge*, 504-514.

PLUMB, K. A., 1990a - Halls Creek Province and The Granites-Tanami Inlier: Regional geology and mineralisation. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 681-695.

PLUMB, K. A., 1990b - Mid-Proterozoic basins of the North Australian Craton - Regional geology and mineralisation. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 881-902.

PLUMB, K. A., ALLEN, R., & HANCOCK, S. L., 1985 - Excursion Guide: Proterozoic evolution of the Halls Creek Province, Western Australia. Conference on Tectonics and Geochemistry of Early to Middle Proterozoic Fold Belts, Darwin, Northern Territory, 1985 Excursion Guide. *Bureau of Mineral Resources, Australia, Record* 1985/25, 87 pp.

PLUMB, K. A., AHMAD, M., & WYGRALAK, A. S., 1990 - Mid-Proterozoic Basins of the North Australian Craton: Regional geology and mineralisation. In HUGHES, F. E. (Editor) - GEOLOGY OF THE MINERAL DEPOSITS OF AUSTRALIA AND PAPUA NEW GUINEA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 14, 881-902.

PLUMB, K. A., & DERRICK, G. M., 1975 - Geology of the Proterozoic rocks of the Kimberley to Mount Isa region. In KNIGHT, C. L. (EDITOR) - ECONOMIC GEOLOGY OF AUSTRALIA AND PAPUA NEW GUINEA, VOLUME 1, METALS. *The Australasian Institute of Mining and Metallurgy, Melbourne*, 217-252.

PLUMB, K. A., & GEMUTS, I., 1976 - Precambrian geology of the Kimberley region, Western Australia. 25th International Geological Congress, Sydney, NSW, 1976, *Excursion Guide 44C*, 72 pp.

PLUMB, K. A., & PERRY, W. J., 1969 - Notes on the geology of the Medusa Banks 1 : 250 000 geological sheet SD/52-10. *Bureau of Mineral Resources, Australia, Record 1969/97*.

PLUMB, K. A., & PERRY, W. J., 1971 - Medusa Banks, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SD/52-10*, 19 pp.

PLUMB, K. A., & VEEVERS, J. J., 1968 - Cambridge Gulf, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SD/52-14*, 30 pp.

PRASTKA, R. L., & POLYNIAC, H. P., 1965 - Marine seismic reflection survey, West Bonaparte Bay Offshore, Australia. Report by Geophysical Services International Ltd. for Anacapa Corp.

PRICHARD, C. E., DALLWITZ, W. B., & ROBERTS, W. M. B., 1960 - The Killi Killi uranium prospects, Western Australia. *Bureau of Mineral Resources, Australia, Record 1960/140*.

RADE, J. 1956 - Report on the southern portion of Westralian Oil Limited's Permit Area, Bonaparte Gulf Basin. Report to Westralian Oil Ltd.

REEVES, F., 1948 - Report on geology and oil possibilities in the Bonaparte Gulf Basin. Report to Standard Vacuum Oil Co.

REEVES, F., & CHALMERS, R. O., 1949 - The Wolf Creek meteorite crater. *Australian Journal of Science*, 11 (5), 154-156.

RIRIE, G. T., 1984 - Geochronologic study of a felsic volcanic and amphibolite unit from the Biscay Formation, Halls Creek Mobile Zone, Western Australia. Technical Memorandum, Union Oil Company of California, Brea, California, 11 pp (unpublished).

ROBERTS, H. G., 1972 - Adelaidean and Cambrian stratigraphy of the Mount Ramsay 1 : 250 000 Sheet area, Kimberley region, Western Australia. *Bureau of Mineral Resources, Australia, Report 150*.

ROBERTS, H. G., DERRICK, G. M., & IVANAC, J. F., 1966 - Report on copper occurrences, Durack River - Salmond River District, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record 1966/135*.

ROBERTS, H. G., HALLIGAN, R., & GEMUTS, I., 1965 - Geology of the Mount Ramsay 1 : 250 000 sheet area, SE/52-9, Western Australia. *Bureau of Mineral Resources, Australia, Record 1965/156*.

ROBERTS, H. G., HALLIGAN, R., & PLAYFORD, P. E., 1968 - Mount Ramsay, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SE/52-9*, 24 pp.

ROBERTS, H. G., & PERRY, W. J., 1966 - The geology of the Mount Elizabeth 1 : 250 000 sheet area SE/52-1, Western Australia. *Bureau of Mineral Resources, Australia, Record 1966/136*.

- ROBERTS, H. G., & PERRY, W. J., 1969 - Mount Elizabeth, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SE/52-1*, 16 pp.
- ROBERTS, J., & VEEVERS, J. J., 1973 - Summary of BMR studies of the onshore Bonaparte Gulf Basin 1963-71. *Bureau of Mineral Resources, Australia, Bulletin* 139, 29-58.
- ROBERTSON, C. S., 1957 - Preliminary report on a seismic survey in the Bonaparte Gulf Area, June-October, 1956. *Bureau of Mineral Resources, Australia, Record* 1957/46.
- ROWLEY, M., & LEE, R. J., 1986 - The Sorby Hills, Western Australia, lead-silver-zinc province. In BERKMAN, D. A. (Editor) - GEOLOGY AND EXPLORATION. *13th Council of Mining and Metallurgical Institutions Congress, Singapore, 1986, Publication, 2*, 173-180.
- RUKER, R. A., 1963 - Explanatory notes for the Cambridge Gulf photo-geological map, Western Australia. *Inst. Francais du Petrole Aust.*, 75.
- SCHNEEBERGER, W. F., 1960 - Report on a gravity survey in Permit 127H, Western Australia. Report by Mines Administration Pty. Ltd. via Ball Associates for Gulf Oil Syndicate.
- SHAW, R. D., TYLER, I. M., GRIFFIN, T. J., & WEBB, A., 1992 - New K-Ar constraints on the onset of subsidence in the Canning Basin. *BMR Journal of Australian Geology and Geophysics*, 13 (1), 31-35.
- SLATYER, R. O., 1960 - Climate of the North Kimberley area, Western Australia. *CSIRO, Australia Land Research Series* 4, 12-19.
- SMITH, C. B., ATKINSON, W. J., & TYLER, E. W. J., 1990 - Diamond exploration in Western Australia, Northern Territory, and South Australia. In GLASSON, K. R., RATTIGAN, J. H., BLAIKE, A. H., & WOODCOCK, J. T. (Editors) - GEOLOGICAL ASPECTS OF THE DISCOVERY OF IMPORTANT MINERALS IN AUSTRALIA. *The Australasian Institute of Mining and Metallurgy, Melbourne, Monograph* 17, 429-453.
- SMITH, E. R., 1955 - Progress report on a seismic survey of the Poole Range-Prices Creek area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1955/35.
- SMITH, E. R., 1957 - Seismic refraction traverse in the Christmas Creek area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1957/37.
- SMITH, E. R., 1966 - Timor Sea-Joseph Bonaparte Gulf marine gravity and seismic sparkarray survey, northwest Australia, 1965. *Bureau of Mineral Resources, Australia, Record* 1966/72.
- SMITH, R. N., 1898 - State of mining in the Kimberley District. Western Australia Geological Survey, Bulletin 2.
- SOFLOULIS, J., 1966 - Bauxite deposits of the north Kimberley region. *Western Australia Geological Survey, Annual Report* 1965, 69-70.
- SOFLOULIS, J., 1968 - Silver-lead-copper-gold prospect MC 38, Kununurra area, Western Australia. *Western Australia Geological Survey, Annual Report* 1967, 45-47.
- SPECK, N. H., 1960 - Land systems of the North Kimberley area, Western Australia. *CSIRO, Australia Land Research Series* 4.

- SPRIGG, R. C., 1950 - Early Cambrian 'jellyfishes' of Ediacara, South Australia, and Mount John, Kimberley District, Western Australia. *Transactions of the Royal Society of South Australia*, 73 (1), 72-99.
- STARKEY, L. J., 1959 - Report on a gravity survey in Permit 127H, Western Australia. Report by Mines Administration Pty. Ltd. for Gulf Oil Syndicate.
- STARKEY, L. J., & ABEL, K. W., 1961 - Carlton gravity survey, P. E. 127H, Western Australia. Report to Oil Development NL.
- STEWART, A. J., 1988 - Discussion - A Proterozoic terrane boundary in the King Leopold Orogen, Western Australia. *Australian Journal of Earth Sciences*, 35, 589-591.
- SUN, S-S., JAQUES, A. L., & McCULLOCH, M. T., 1986 - Isotopic evolution of the Kimberley Block, Western Australia. Fourth International Kimberlite Conference, Perth, Western Australia, 1986. Extended Abstracts. *Geological Society of Australia, Abstracts Series*, 16, 346-348.
- SUN, S-S., WALLACE, D. A., HOATSON, D. M., GLIKSON, A. Y., & KEAYS, R. R., 1991 - Use of geochemistry as a guide to platinum group element potential of mafic-ultramafic rocks: examples from the west Pilbara Block and Halls Creek Mobile Zone, Western Australia. *Precambrian Research*, 50, 1-35.
- SWARBRICK, E. E., 1965a - Ord River main dam site No. 2 drilling programme 1964, completion report. *Western Australia Geological Survey, Record* 1965/7.
- SWARBRICK, E. E., 1965b - Gravitational gliding tectonics at the Ord River main dam site No.2. *Western Australia Geological Survey, Annual Report* 1964, 18-21.
- TALBOT, H. W. B., 1910 - Geological observations between Wiluna, Halls Creek, and Tanami. *Western Australia Geological Survey, Bulletin* 39, 1-88.
- TAYLOR-ROGERS, H. S., 1956 - Porosity and permeability determinations on core samples from Frazer River No. 1 well, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1955/110.
- THOM, J. H., 1975 - Kimberley region. In THE GEOLOGY OF WESTERN AUSTRALIA. *Western Australia Geological Survey, Memoir* 2, 160-193.
- THOMAS, G. A., 1963 - The Carboniferous stratigraphy of the Bonaparte Gulf Basin. *4ième Congress Strat. Géol. Carb., Heerlen*, 1958.
- THORNETT, J. R., 1986 - Evolution of a high-grade metamorphic terrain in the Proterozoic Halls Creek Mobile Zone, Western Australia, Ph.D. thesis, The University of Western Australia, Australia (unpublished), 350 pp.
- THYER, R. F., STOTT, P. M., & NEUMANN, F. J. G., 1959 - Report on a gravity survey on the Bonaparte Gulf Basin 1956-1958. *Bureau of Mineral Resources, Australia, Record* 1959/20.
- TINLINE, R. J., & FIFE, J. S., 1962 - Final report, Carlton seismic survey. Report by General Geophysical Co. (Bahamas) Ltd. to Oil Development NL.
- TRAVES, D. M., 1949 - Preliminary report, Ord-Victoria region. *Bureau of Mineral Resources, Australia, Record* 1949/22.

- TRAVES, D. M., 1955a - The geology of the King Edward-Drysdale area, North Kimberley, Western Australia. Bureau of Mineral Resources, Australia, Record 1955/22.
- TRAVES, D. M., 1955b - The geology of the Ord-Victoria region, northern Australia. *Bureau of Mineral Resources, Australia, Bulletin* 27, 133 pp.
- TYLER, I. M., & GRIFFIN, T. J., 1990 - Structural development of the King Leopold Orogen, Kimberley region, Western Australia. *Journal of Structural Geology*, 12, 703-714.
- TYLER, I. M., GRIFFIN, T. J., & SHAW, R. D., 1991 - Early Palaeozoic tectonism and reactivation of pre-existing basement structures at the margins of the Kimberley Craton, Western Australia. In CRATONIC MARGINS STRUCTURAL AND TECTONIC PROCESSES. 6th Specialist Group in Tectonics and Structural Geology Field Conference, Margaret River, Western Australia, September, 1991. *Geological Society of Australia, Abstracts*.
- UTTING, E. P., 1961 - Permit to explore No. 127H, West Australia; geological map with associated maps and notes. Report to Oil Development NL, 11th May 1961.
- VALE, K. R., 1953 - Seismic survey of the Nerrima Dome, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1953/72.
- VALE, K. R., 1956 - Seismic reflection traverse west of Langey's Crossing, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1956/112.
- VEEVERS, J. R., & ROBERTS, J., 1968 - Upper Palaeozoic rocks, Bonaparte Gulf Basin of northwestern Australia. *Bureau of Mineral Resources, Australia, Bulletin* 97.
- VEEVERS, J. R., ROBERTS, J., KAULBACK, J., & JONES, P. J., 1964 - New observations on the Palaeozoic geology of the Ord River area, Western Australia and Northern Territory. *Australian Journal of Science*, 26 (11), 352-353.
- VOGT, J. H., - Third annual report E80/685 - Louisa Downs. Pancontinental Mining, Degussa Exploration, and Helix Resources NL. Unpublished Report to Western Australian Department of Mines.
- WALLACE, D. A., & HOATSON, D. M., 1990 - Petrology and whole-rock geochemistry of selected mafic and ultramafic suites from the Pilbara Block and Halls Creek Mobile Zone, Western Australia. *Bureau of Mineral Resources Australia, Record* 1990/46, 69 pp.
- WALLACE, D. A., HOATSON, D. M., SUN, S-S., & KEAYS, R. R., 1990 - The geochemistry and PGE potential of selected East Kimberley and West Pilbara mafic-ultramafic intrusives and related rocks. In GONDWANA: TERRANES AND RESOURCES, Abstracts No. 25. Tenth Australian Geological Convention, Hobart, 1990. *Geological Society of Australia*, 1-2.
- WAPET (West Australian Petroleum Pty. Ltd.), 1963 to 1972 - Many well completion reports and geophysical survey reports for the Mount Bannerman & Billiluna 1 : 250 000 Sheet areas, listed in Yeates & Muhling (1977) and Blake & others (1977), respectively. Various Bureau of Mineral Resources Australia Petroleum Search Subsidy, Unpublished Acts Reports.
- WELLMAN, P., 1976 - Gravity trends and the growth of Australia: A tentative correlation. *Journal of the Geological Society of Australia*, 23, 11-14.

- WELLS, A. T., 1960 - Mount Bannerman, Western Australia - 4-mile Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SE/52-13*, 24 pp.
- WELLS, A. T., 1962 - Billiluna, Western Australia - 4-mile Geological Series, Sheet SE/52-14. Bureau of Mineral Resources, Australia, Explanatory Notes 24.
- WHITE, M. E., 1956 - Permian plant remains from water bore for BMR 3 Price's Creek, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1956/105.
- WHITE, M. E., 1957 - Botanical report on plant remains from Grant Range Bore No. 1, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1957/16.
- WHITE, S. H., & MUIR, M. D., 1989 - Multiple reactivation of coupled orthogonal fault systems: An example from the Kimberley region in northern Western Australia. *Geology*, 17, 618-621.
- WHITWORTH, R., 1970 - Reconnaissance gravity survey of parts of Northern Territory and Western Australia, 1967. *Bureau of Mineral Resources, Australia, Record* 1970/15.
- WILKINSON, D., 1992 - Diamonds. In Register of Australian Mining 1992/93. *Resource Information Unit Limited, Perth*, 241-254.
- WILKINSON, D., 1993 - Diamonds. In Register of Australian Mining 1993/94. *Resource Information Unit Limited, Perth*, 256-268.
- WILKINSON, J. F. G., DUGGAN, M. B., HERBERT, H. K., & KALOCSAI, G. I. Z., 1975 - The Salt Lick Creek layered intrusion, East Kimberley region, Western Australia. *Contributions to Mineralogy and Petrology*, 50, 1-23.
- WILLIAMS, L. W., 1955 - Seismic reflection survey over Deep Well anticline, Myroodah, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1955/110.
- WILLIAMS, L. W., 1956 - Seismic reflection survey in the Poole Range-Christmas Creek area, Kimberley Division, Western Australia. *Bureau of Mineral Resources, Australia, Record* 1956/66.
- WOODWARD, H. P., 1891 - Report on the goldfields of the Kimberley District. *Western Australia Parliamentary Paper* 18.
- WYATT, J. D., 1960 - Notes on the diamond drilling of the Bandicoot Bar division dam site, Ord River, East Kimberley Division. *Western Australia Geological Survey, Annual Report* 1959, 34-36.
- WYATT, J. D., 1961 - Preliminary report on the diamond drill exploration of the Ord River No. 2 main dam site, Ord River, East Kimberley Division. *Western Australia Geological Survey, Annual Report* 1960, 41-45.
- WYATT, J. D., 1962a - Final report on the diamond drill exploration of the Ord River No. 2 main dam site, Ord River, East Kimberley Division. *Western Australia Geological Survey, Annual Report* 1961, 24-35.
- WYATT, J. D., 1962b - Examination of iron ore - Pompey's Pillar. *Western Australia Geological Survey, Annual Report* 1961.
- WYATT, J. D., 1965 - Ord River main dam site No. 2 detailed geology. *Western Australia Geological Survey, Record* 1965/5.

WYATT, J. D., 1966 - A geological investigation of the Ord River main dam site. MSc. thesis, University of Western Australia, Australia (unpublished), 175 pp.

WYATT, J. D., 1967 - Geological investigation of Moochalabra Creek dam site. *Western Australia Geological Survey, Annual Report 1966*.

YEATES, A. N., & MUHLING, P. C., 1977 - Mount Bannerman, Western Australia - 1 : 250 000 Geological Series. *Bureau of Mineral Resources, Australia, Explanatory Notes SE/52-13*, 24 pp.

YOUNG, R. W., 1987 - Sandstone Landforms of the tropical East Kimberley region, northwestern Australia. *Journal of Geology* 95 (2), March, 205-218.

YOUNG, R. W., 1988 - Quartz etching and sandstone karst: examples from the East Kimberleys, northwestern Australia. *Zeitschrift für Geomorphologie* 32 (4), December, 409-423.

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