

Australian Geoscience Information Association

Occasional Paper 4

**GUIDELINES FOR GEOSCIENCE BIBLIOGRAPHICAL DATABASES**

by

Lorraine A. Gerdes  
(South Australian Department of Mines and Energy)

and

Kerry Smith  
(Cultus Petroleum NL)

Update of paper initially given at AGIA Seminar of the  
9th Australian Geological Convention  
of the Geological Society of Australia,  
Brisbane, February 1988.

Australian Geoscience Information Association  
Perth 1990

NOTE: These guidelines were developed and this paper prepared when the key publicly-available geoscience databases were mounted on the CLIRS Information Services network as the Australian Resources Industry Database. CLIRS Information Services has now been restructured and renamed Info-One International Pty Ltd and ARID has been renamed GEOPAC. Where applicable, the new names are used in this paper.

This paper was initially presented at the AGIA Seminar (Session 11: Geological Source Data Handling, 9th Australian Geological Convention) in Brisbane, 2-3 February 1988 on behalf of the AGIA Standards Subcommittee.

Modifications to the guidelines recommended at subsequent meetings of the Subcommittee have been included.

© Australian Geoscience Information Association, 1990

National Library of Australia  
Cataloguing-in-Publication entry

Gerdes, Lorraine A. (Lorraine Alice), 1941-  
Guidelines for geoscience bibliographical databases.

ISBN 0 949231 06 1.  
ISSN 0816-6234 (Series)

1. Geology - Data bases. 2. Information storage and retrieval systems - Geology. I. Smith, Kerry, 1946- II. Australian Geoscience Information Association. III. Title. (Series : Occasional paper (Australian Geoscience Information Association); 4).

025.0655

# AUSTRALIAN GEOSCIENCE INFORMATION ASSOCIATION

## LIST OF PUBLICATIONS

Information needs of the exploration geoscientist. Proceedings of the Australian Geoscience Information Association Seminar, Glenside, South Australia, December, 1983. Compiled and edited by G.E. Campbell, 1984.

### AGIA OCCASIONAL PAPER SERIES

Geochemical databases: the Western Mining experience. Young, R., 1985. Occasional Paper, 1.

Papers presented at the AGIA map workshop on 24 July 1985 at the Australian Mineral Foundation, Adelaide. AGIA (SA Branch), 1986. Occasional Paper, 2.

A directory of geoscience information sources for Western Australia. Compiled by AGIA (WA Branch). Edited by I. Barnett, 1987 (New edition in prep.). Occasional Paper, 3.

Guidelines for geoscience bibliographical databases. Gerdes, L.A. and Smith, K., 1990. Occasional Paper, 4.

AGIA publications are available from:

AGIA Secretary  
B. Knyn  
Senior Librarian  
Geological Survey of WA  
100 Plain Street  
EAST PERTH WA 6004  
Tel: (09) 222 3165

AMF Bookshop  
63 Conyngham Street  
GLENSIDE SA 5065  
Tel: (08) 379 0444  
Telex: AA87437 AMFINC  
Fax: (08) 79 4634

## CONTENTS

	Page
ABSTRACT .....	1
INTRODUCTION .....	2
HISTORICAL BACKGROUND .....	2
APPLICATION OF THE GUIDELINES .....	3
RECOMMENDATIONS .....	3
CONCLUSION .....	9
ACKNOWLEDGEMENT .....	9
APPENDIX A	
Examples of AESIS, MINFINDER and SAMREF articles from GEOPAC ...	10
APPENDIX B	
List of chemical symbols/codes as recommended by AMIRA (Australian Mineral Industry Research Association) .....	13

# GUIDELINES FOR GEOSCIENCE BIBLIOGRAPHICAL DATABASES

by

Lorraine A. Gerdes and Kerry Smith

---

## ABSTRACT

Although it is recognised that computers can handle a wide variation in terminology through conversion programs, the lack of guidelines in the structure and development of geoscience databases is not satisfactory to the end user, particularly if the user has access to geoscience databases from several organisations. Guidelines are also invaluable to those who are about to develop a new database.

The need for standard approaches to manual, and particularly computerised, database entry has often been discussed amongst the Australian geoscience information community. The Australian Geoscience Information Association (AGIA) took the initiative in early 1987 to establish a Standards Subcommittee whose membership was to be flexible and dependent upon the expertise required. Guidelines for bibliographical (or reference) databases was tackled first.

Guidelines have been developed for the style, format and/or usage of the following data items:

- map sheet numbering
- geoscience indexing (subject descriptors)
- company names
- stratigraphic names
- geographic names
- well names
- tenement nomenclature
- authors
- serial titles
- collation
- chemical data.

To assist in the application of some of these guidelines, the Subcommittee has recommended that relevant authority files be made readily available, preferably by mounting them on the Info-One information network.

Three bibliographical databases - MINFINDER, AESIS and SAMREF - are currently available on the Info-One International information network. The Subcommittee has strongly recommended that these databases should conform to the guidelines as far as practicable so as to avoid confusion to the user and make them easier to use. It also recommends that any new bibliographical databases conform to the guidelines.

---

## INTRODUCTION

The achievements of Australian geoscientists have been recorded in many reports, maps and publications; this represents an invaluable investment to the nation. Much of the available information has originated from the State mines departments and the Bureau of Mineral Resources (BMR) and from company reports under the control of the Geological Surveys. To be of value, this information must be easily accessed. For many years, either experts were consulted for information and/or manual registers and card indexes were used to locate this information.

Computerised bibliographical or reference databases are now being developed. The most well known of these is the Australian Earth Sciences Information System (AESIS). This was begun in 1975 by the Australian Mineral Foundation (AMF) as a cooperative venture of the State mines departments, BMR, CSIRO, AMF and the National Library of Australia and is managed by AMF. In most mines departments and BMR, different computerised reference databases were also being developed to meet the specific requirements of each organisation and its users. Because of the historical evolution of these databases and because the organisations have had different computer systems, the development of standardised databases was previously not feasible.

The need for standard approaches to manual, and particularly computerised, database entry has often been discussed amongst the Australian geoscience information community, and was highlighted at the Third International Conference on Geoscience Information in Adelaide in 1986 as an urgent need.

The achievements of the Australian Geoscience Information Association (AGIA), in developing guidelines for standardising geoscience bibliographical databases and their application to date, is the subject of this paper. It is important to note that the term *guidelines* is used rather than *standards* to stress the fact that the recommendations are not compulsory, as it is recognised that in many situations they may not be appropriate. Upgrading of these guidelines will be published as warranted.

## HISTORICAL BACKGROUND

MINFINDER - developed from a long-established manual card system - and COREFINDER are both produced by the NSW Department of Minerals and Energy and were mounted on the CLIRS Information Services (now Info-One International) network in 1984. SAMREF, produced by the South Australia Department of Mines and Energy, was mounted as a trial database on CLIRS in 1986. One of the reasons that these databases were mounted on that network was that they were already using the same text retrieval software, STATUS, as was used on CLIRS. Implementation could therefore be achieved very easily.

AESIS, developed since 1975 on CSIRO software, was transferred to CLIRS Information Services in 1987. With this transfer, the Australian Resources Industry Database (ARID), now GEOPAC, was established; this consists of a family of related databases which includes AESIS, MINFINDER, COREFINDER and SAMREF.

Although dealing with the same type of information and aimed at the same group of users, the bringing together of these databases onto the one network highlighted the differences in their design and terminology which were caused by their different origins. For example, there were differences in the recording of the map sheet values; a common problem with geoscience databases. As database searches in geoscience frequently related to map sheet areas, standard map-sheet nomenclature is fundamental.

Different named-section or field-name headings were used for the same concept. For example, SUBJECT in MINFINDER, KEYWORDS in SAMREF and SU in AESIS all referred to a subject field. Such differences were unacceptable and confusing to the users.

AGIA therefore took the initiative to establish a Standards Subcommittee whose membership was to be flexible and dependent upon the expertise required for a particular project. It first met in Adelaide on 9 February 1987, and held its second meeting in Canberra on 26 May 1987. A third meeting was held in Brisbane in February 1988, following the presentation of this paper, and the fourth meeting was held in Sydney on 21 June 1989.

The first project was to develop guidelines for bibliographical databases before further databases were developed on ARID and before the final design of AESIS on ARID was completed. The guidelines relate particularly to the following geoscience databases:

- AESIS
- MINFINDER
- SAMREF
- other government geoscience databases held by State mines departments and the Bureau of Mineral Resources
- private company databases.

### APPLICATION OF THE GUIDELINES

AESIS was launched on ARID in a standardised format in May 1987. The primary aim of the Subcommittee was successfully achieved when SAMREF was redesigned and reloaded in December 1987. MINFINDER was redesigned to a similar format in 1988.

Company and other government users not intending to develop public access databases will also be able to use these guidelines for their own databases thus saving time in design development.

The ultimate effect of the guidelines should benefit all geoscience database users who will become very familiar with the design of the databases and so be able to access them easily and quickly.

### RECOMMENDATIONS

Where possible the meeting date at which the recommendation has been adopted has been noted.

#### Recommendation 1 - GEOPAC Geoscience Standards

- a) All geoscience databases on GEOPAC will/should conform to a minimum standard as recommended by the GEOPAC Advisory Council of Info-One International and based on recommendations of the AGIA Standards Subcommittee.

This is to:

- i) avoid confusion to the user and provide maximum ease of use
- ii) enable the development of co-ordinated menu screens, macros and data entry for use in all similar groups of geoscience databases
- iii) make possible the extraction of data from several databases for the production of printed publications
- iv) formulate a set of standards for future geoscience databases, which may be developed on GEOPAC.

- b) It is suggested that a database of authority files be proposed for mounting on GEOPAC, for use with GEOPAC geoscience databases, and as a reference tool for users. It should include:
- Australian Thesaurus of Earth Sciences and Related Terms (published by AMF)
  - AMF list of company names with codes
  - BMR list of Australian defined stratigraphic names
  - BMR list of standard abbreviations for stratigraphic nomenclature
  - list of geological provinces and structural terms
  - list of tenements for each State with abbreviations
  - list of geoscience serial titles, with full ISSN numbers
  - national standard map-sheet name code and grids for Australian 1:250 000 and 1:100 000 sheets
  - Australian gazetteer
  - AMIRA list of chemical symbols.

### Recommendation 2 - Map Sheet Nomenclature

- a) Punctuation should be avoided.
- b) 1:250 000 and 1:100 000 map-sheet numbers should be written in separate fields as 6 and 4 consecutive characters respectively,
- e.g. SH5514            (for 1:250 000 map numbers)  
       8034            (for 1:100 000 map numbers).
- c) 1:50 000 map-sheet numbers should conform to the existing standard of Roman numerals without punctuation,
- e.g. 8034IV.
- d) Map-sheet names should be entered without abbreviation and may be either in upper or lower case.
- e) Keyed-field titles on GEOPAC for map-sheet numbers will be:
- #250                    (for 1:250 000 map numbers)  
 #100                    (for 1:100 000 map numbers).
- f) Keyed-field titles on GEOPAC for map sheet names will be:
- #250N                  (for 1:250 000 map names)  
 #100N                  (for 1:100 000 map names)  
 #50N                    (for 1:50 000 map names).

### Recommendation 3 - Geoscience Terms

- a) The 'Australian Thesaurus of Earth Sciences and Related Terms' published by AMF is the standard for controlled vocabulary and, subject to the approval of AMF and user demand, should be mounted on the proposed GEOPAC authority database.
- b) Subsets of specialised terms for this Thesaurus should be developed by the petroleum and mineral industry.
- c) Specialist groups such as palaeontologists should be urged to contribute more actively to the Thesaurus.



#### Recommendation 4 - Company Names

- a) AMF's list of company names and abbreviations should be used and, subject to AMF approval, this list should be mounted on the GEOPAC authority database. Printed copies and computer files are available from AMF. Any company name codes not covered by the list can be obtained from the Information Services Manager at AMF. Periodic updates to the list will be made available.

The Australian Stock Exchange's list of company names and mnemonic codes was not suitable, as not all companies engaged in resource exploration in Australia are covered by it.

#### Recommendation 5 - Stratigraphic Names

- a) 'The Field Geologists' guide to lithostratigraphic nomenclature' by the Stratigraphic Nomenclature Committee of the Geological Society of Australia is recognised as the standard for Australian stratigraphic nomenclature. This guide was published in the Australian Journal of Earth Science 32(2), 1985.
- b) Stratigraphic names should be written without abbreviation when used in a controlled vocabulary. However, when abbreviations (e.g. Fm for Formation) are necessary, they should conform to a standard list, to be compiled by BMR, and guided by current BMR practice for the GEOPAC authority database.
- c) A list of defined stratigraphic names extracted from the Central Register of Stratigraphic Names will eventually be provided by the BMR.

#### Recommendation 6 - Geographic Names

- a) Punctuation, abbreviations and inverted terms should be avoided.
- b) In the case of hyphenated names, the hyphen should be dropped and the space deleted if the word looks odd,  
  
e.g. 'Cadna-owie' becomes 'Cadnaowie'.
- c) When State and major overseas names are abbreviated, the following abbreviations are recommended:

ACT	NZ	SA	USA
NSW	PNG	Tas	UK
NT	Qld	Vic	WA

- d) In general, geographic names should be recorded as used in the report being indexed. The Australian Gazetteer should be used as a guide when in doubt about spelling and terminology.
- e) Tagging of tectonic provinces should be encouraged.

#### Recommendation 7 - Drillhole and Well Nomenclature

- a) Well names in titles should be recorded exactly as written.
- b) For controlled vocabulary avoid punctuation. The preferred format for petroleum wells is: well name followed by a space and the well number,  
  
e.g. Penola 1.

Terminology for other types of drillholes cannot be standardised at this stage, because of the wide variations currently in practice.

#### **Recommendation 8 - Tenement Nomenclature**

a) Each State mines department is to be requested to provide a list of tenement types and names for comparison and adoption of a standard list of abbreviations. It is recommended that this list be mounted on the GEOPAC authority database.

b) **Recommendation 8b updated on 21/6/89**

Spaces and punctuation should be avoided if possible, and tenement nomenclature should have the same number of characters to aid sorting. However, it is realised that two entries or fields may be needed to cater for the legal entry, and/or requirements specific to an organisation,

e.g. WA-128-P

and the practical entry

WA128P.

c) The keyed field title for tenement numbers on GEOPAC will be #TN.

#### **Recommendation 9 - Authors**

a) **Personal Authors**

The AESIS practice is recommended, i.e. surname, comma and initials without full stops,

e.g. Smith, B A

b) **Recommendation 9b updated on 21/6/89 - Corporate Authors**

As for the SERIAL TITLE Recommendation 10 (below),

i.e. Country, State, then organisation.

#### **Recommendation 10 updated on 21/6/89 - Serial Titles**

Full serial titles/citation are favoured. The AESIS practice where there is a disposition to invert, for serial titles is recommended namely:

- where a serial/journal has a distinctive title, use the title  
e.g. Australian Journal of Earth Sciences
- where an organisation is involved in production of the serial, put the organisation name and then the type of publication  
e.g. Royal Society. Bulletin
- in the case of a government agency, put the Country/State, then the agency, then the type of publication  
e.g. South Australia. Department of Mines and Energy. Bulletin.

### **Recommendation 11 - Collation**

The AESIS practice of abbreviating collation details is recommended as the standard,

e.g. 2 appx, 5 fig, 6 ref.

Plural forms are not abbreviated, e.g. figures not fig. Further discussion is needed on collation practice.

### **Recommendation 12 - Geographic Coordinates**

These are to be recorded in degrees, minutes, and seconds, as follows:

longitude - DDD MM SS E/W  
latitude - DD MM SS N/S

The map projection should be recorded.

### **Recommendation 13 - Chemical Data**

The list of chemical symbols in AMIRA study 'Transmission of chemical data in the mineral industry' coordinated by Mintec Systems (Australia) Pty Ltd, 1982, is to be used as the authority for abbreviations of chemical terms. (See Appendix B of this report).

### **Recommendation 14 - Screen Formats**

The following nomenclature is being used on GEOPAC for data common to the three databases MINFINDER, AESIS and SAMREF:

#### Named sections

TI	Title
TN	Tenement number
AU	Author
SO	Source
NO	Notes
AB	Abstract or annotation
SU	Subject
LO	Geographic locality
MA	Map sheet areas

#### Keyed fields

#TN	Tenement number
#AU	Author
#Date	Date of publication
#BR	Broad subject code
#250	1:250 000 map number
#100	1:100 000 map number.

Additional named sections and keyed fields are used in individual databases on GEOPAC as follows:

Named Sections

AESIS	MINFINDER	SAMREF	Meaning
TI	TI	TI	Title
TN	TN	TN	Tenement number
		CO	Tenement holder
AU	AU	AU	Author
SO	SO	SO	Source
NO	NO	NO	Notes
		CM	Comment
SU	SU	SU	Subject
ST		ST	Stratigraphic name
		DR	Drill hole, well
MI		MI	Mine, deposit, well
LO	LO	LO	Locality
MA	MA	MA	Map
AB	AB	AB	Abstract, annotation
AS		AS	Elements, assayed
AN			Anomalous value
KEY		KEY	Keyed fields

Keyed Fields

AESIS	MINFINDER	SAMREF	Meaning
#ES	#Catno	#CNO	Control, catalogue no.
#UPDATE	#UPDATE	#DOE	Update, date of entry
#RT			Document type code
	#TN, #Ap	#TN	Tenement number
#AU	#AU	#AU	Author
#OC			Organisation code
#DATE	#Date	#DATE	Date of publication
#RE	#ref	#RE1, #RE2, #RE3, #no	Reference no.
#BR	#BR	#BR	Broad subject code
		#TECT	Tectonic name
		#BASIN	Basin name
		#WELL	Well name
#STATE			State code
#250	#250	#250	1:250 000 map number
#100	#100	#100	1:100 000 map number
		#250N	1:250 000 map name.

Macros are also to be used across the databases to present a common interface to the user, where change is not practical.

## CONCLUSION

The AGIA recommendations are currently being applied to AESIS, MINFINDER and SAMREF on GEOPAC. Changes have been made to these databases so that they will have a common design while still retaining the individual features necessary to meet the specific requirement of each database. The benefits - although not yet fully implemented - are substantial to both users and database providers.

It is essential that database developers be encouraged to use guidelines promoted by AGIA for both geoscience databases and those in related subject disciplines, particularly databases which may become publicly accessible. This will make possible greater opportunities for cooperation and sharing of information.

Other guidelines are still under discussion by AGIA. The next major area to be addressed is drillhole log data.

Geoscience organisations are invited to comment on and contribute these guidelines. Please send any communications to: Mr L C Ranford, Convenor, AGIA Standards Subcommittee, c/o Geological Survey of WA, 100 Plain Street, East Perth WA 6004.

## ACKNOWLEDGEMENT

The authors acknowledge the contributions of many members of government organisations and mineral and petroleum companies to this project, particularly the information they have freely provided and their support of the AGIA Standards Subcommittee.

## APPENDIX A

### Examples of AESIS, MINFINDER and SAMREF articles from GEOPAC

#### EXAMPLE OF AESIS ARTICLE

ES 705276  
TI A to P 1124M - Roma area, final report.  
AU Reardon, L S;  
SO Crooks Mitchell Peacock and Stewart Pty Ltd. GSQ CR 4417, March, 19 pages;; 1 fig.,  
10 tables: (1973) [Open file - Qld. Available from the Department]  
SU 1250/1344/  
Mineral exploration - Qld/Kaolin/Sedimentary deposits/Geochemical exploration - Qld/Soil  
sampling/Core drilling/Laboratory tests/Jurassic/Cretaceous/Surat Basin/  
ST Wallumbilla Formation/  
LO Queensland: Roma/  
MA SG5515 8543/SG5511 8544/SG5516 8643/SG5512 8644/  
KEY #ES 705276 #CODE A #CN 10571 #AU (Reardon, L S) #RT R #RE (GSQ CR 4417,  
March,) #DATE 1973 #OC CRK #OC QGS #BR 1250 #BR 1344 #STATE Q #250 SG5515  
#100 8543 #250 SG5511 #100 8544 #250 SG5516 #100 8643 #250 SG5512 #100 8644  
#UPDATE 11:09:1987

#### EXAMPLE OF MINFINDER ARTICLE BEFORE STANDARDISATION

Relinquishment report, EL's 2344 and parts of 2340 and 23412, Pleasant Hills - Yerong Creek,  
The Rock Area.

#ref=GS1987/052

#### AUTHOR

Pan Australian Mining Ltd

Birch, J.

#### SUBJECT

Geochemistry, Drilling

#### NOTES

#Catno=17057

#Date=1987

Micro n Confid nc

13pp, 58 appx, 7 maps

#Licence=EL2340

#Appno=136Wa

#Licence=EL2341

#Appno=137Wa

#Licence=EL2344

#Appno=138Wa

#### LOCALITY

#sheet=SI/55-14

Jerilderie

#map=8227I

#map=8227II

#map=8226I

#sheet=SI/55-15 Wagga Wagga

#map=8327III #map=8327IV

Pleasant Hills, Yerong Creek, The Rock, Murrumbidgee River

#### ABSTRACT

Exploration Licences 2340, 2341 and 2344 cover part of an area, originally comprising 5 contiguous  
exploration licences.

Principal exploration targets were volcanogenic base metals, gold and tin tungsten mineralisation.

Work carried out in the areas relinquished comprised collection and analysis of 41 drainage  
samples, geological mapping, analysis of 7 rock reverse cycle holes generally to basement.

Basement samples for some holes were analysed for Cu, Pb, Zn, Ag, Sn, W, As, Mo and Au.

Results indicate the area relinquished was not sufficiently prospective to justify further work at  
this time.

SAME MINFINDER ARTICLE USING PROPOSED STANDARDS

TI Relinquishment report, EL's 2344 and parts of 2340 and 2341, Pleasant Hills - Yerong Creek, The Rock area.  
SO #ref=GS1987/052  
AU Pan Australian Mining Ltd  
Birch, J.  
SU #BR=1190, #BR=1090,  
Geochemistry, Drilling  
NO #AU=(Pan Australian Mining Ltd)  
#Catno=17057 #Date=1987  
Micro n open file,  
13pp, 58 appx, 7 maps  
TN #TN=EL2340 #Ap=136Wa  
#TN=EL2341 #Ap=137Wa  
#TN=EL2344 #Ap=137Wa  
MA #250=SI5514 Jerilderie  
#100=8227I #100=8227II #100=8226I  
#250=SI5515 Wagga Wagga  
#100=8327III #100=8327IV  
LO Pleasant Hills, Yerong Creek, The Rock, Murrumbidgee River  
AB EL's 2340, 2341 and 2344 cover part of an area, originally comprising 5 contiguous exploration licences.  
Principal exploration targets were volcanogenic base metals, gold and tin tungsten mineralisation.  
Work carried out in the areas relinquished comprised collection and analysis of 41 drainage samples, geological mapping, analysis of 7 rock reverse cycle holes generally to basement. Basement samples were analysed for Cu, Pb, Zn, Ag, Sn, W, As, Mo and Au. Results indicate the area relinquished was not sufficiently prospective to justify further work at this time.

EXAMPLE OF SAMREF ARTICLE BEFORE STANDARDISATION

#CNO=0002251 DOC-TYPE: Company rep #DOE=01/04/87  
TITLE  
#TN=EL1345; Mucatoona. Progress and final reports from 29.7.86 to 29.10.86.  
#Env=6759  
COMPANY  
Electrolytic Zinc Co Australasia Ltd; (Code: EZC);  
AUTHOR  
Schmidt, G L; #DOP=1986  
NOTES  
2 fiche, 19 pages; 7 fig, 1 ref,  
ABSTRACT  
Exploration for gold 10 km SSW of Angepena homestead, included stream sediment sampling over the Mucatoona Diapir and limited sampling of known metal occurrences. The principal gold target, the Angepena Diapir was not sampled.  
KEYWORDS  
#SC=1345; #SC=1190; Gold exploration; Geochemical maps; Silicate analysis; Wilpena Group;  
#TECT=(Adelaide Geosyncline);  
Assays : Cu;Zn;Co;Ni;Fe;Mn;Pb;As;Ba;Sb;Bi;Ba;Ag;Au;  
LOCALITY  
Angepena Goldfield; Mucatoona; #250=SH5409 #MAP=COPLEY; #100=6636IV; #100=6636I.

SAME SAMREF ARTICLE USING PROPOSED STANDARDS

#CNO=0002251 DOCTYPE: Company rep #DOE=01:04:87  
TI Mucatoona. Progress and final reports from 29.7.86 to 29.10.86.  
TN #TN=EL1345;  
CO Electrolytic Zinc Co Australasia Ltd; (Code: EZC);  
AU Schmidt, G L;  
SO SADME:open:file, #RE2=(Env 6759); 2 fiche, 19 pages; 7 fig, 1 ref,  
#DATE=1986  
AB Exploration for gold 10 km SSW of Angepena homestead, included stream sediment sampling  
over the Mucatoona Diapir and limited sampling of known metal occurrences. The principal  
gold target, the Angepena Diapir was not sampled.  
SU #BR=1345; #BR=1190; Gold exploration; Geochemical maps; Silicate analysis;  
#TECT=(Adelaide Geosyncline);  
ST Wilpena Group  
AS Cu; Zn; Co; Ni; Fe; Mn; Pb; As; Ba; Sb; Bi; Ba; Ag; Au;  
MI Angepena Goldfield;  
LO Mucatoona;  
MA #250=SH5409 #250N=COPLEY; #100=6636IV; #100=6636I;  
KEY #AU=(Electrolytic Zi 1986)



## APPENDIX B

### LIST OF CHEMICAL SYMBOLS/CODES

As recommended by AMIRA (Australian Mineral Industry Research Association).

Name	Mnemonic	Name	Mnemonic
ACIDITY	pH	GADOLINIUM	Gd
ACTINIUM	Ac	GALLIUM	Ga
ALUMINA AVAILABLE	Alav	GEIGER ALPHACOUNT	GAlp
ALUMINIUM	Al	GEIGER TOTAL COUNT	GTC
ANTIMONY	Sb	GERMANIUM	Ge
ARGON	Ar	GOLD	Au
ARSENIC	As	HAFNIUM	Hf
ASTATINE	At	HELIUM	He
BARIUM	Ba	HOLMIUM	Ho
BARIUM OXIDE	BaO	HYDROGEN	H
BERYLLIUM	Be	INDIUM	In
BIOCARBONATE RADIC	HCO3	IODINE	I
BISMUTH	Bi	IRIDIUM	Ir
BORON	B	IRON	Fe
BROMINE	Br	IRON TOT AS Fe2O3	FeTot
CADMIUM	Cd	KRYPTON	Kr
CALCINED IRON	Feclc	LANTHANUM	La
CALCIUM	Ca	LEAD	Pb
CALCIUM OXIDE	CaO	LITHIUM	Li
CARBON	C	LOSS ON IGNITION	LOI
CARBON DIOXIDE	CO2	LUTETIUM	Lu
CARBONATE RADICAL	CO3	MAGNESIUM	Mg
CERIUM	Ce	MAGNESIUM OXIDE	MgO
CESIUM	Cs	MANGANESE	Mn
CHLORINE	Cl	MANGANESE OXIDE	MnO
CHROMITE	Cr2O3	MERCURY	Hg
CHROMIUM	Cr	MOLYBDENUM	Mo
COBALT	Co	NEODYMIUM	Nd
COPPER	Cu	NEON	Ne
DYSPROSIUM	Dy	NICKEL	Ni
ERBIUM	Er	NIOBIUM	Nb
EUROPIUM	Eu	NITROGEN	N
FERRIC OXIDE	Fe2O3	OSMIUM	Os
FERROUS OXIDE	FeO	OXYGEN	O
FLUORINE	F	PALLADIUM	Pd
FRANCIUM	Fr	PHOS PENTOXIDE	P2O5
PHOSPHORUS	P	SULPHATE RADICAL	SO4
PLATINUM	Pt	SULPHIDE	S --
POLONIUM	Po	SULPHUR	S
POTASSIUM	K	TANTALUM	Ta
POTASSIUM OXIDE	K2O	TELLURIUM	Te
PRASLODYMIUM	Pr	TERBIUM	Tb
PROTACTINIUM	Pa	THALLIUM	Tl
PYROLUSITE	MnO2	THORIUM	Th

Name	Mnemonic	Name	Mnemonic
RADIUM	Ra	THORIUM OXIDE	ThO2
RADON	Rn	THULIUM	Tm
REACTIVE SILICA	SiRac	TIN	Sn
REDOX POTENTIAL	EH	TITANIUM	Ti
RHENIUM	Re	TITANIUM OXIDE	TiO2
RHODIUM	Rh	TOTAL ALUMINA	Al2O3
RUBIDIUM	Rb	TOTAL DSLV SOLID	TDS
RUTHENIUM	Ru	TUNGSTEN	W
SAMARIUM	Sm	TUNGSTEN OXIDE	WO3
SCANDIUM	Sc	URANIUM	U
SCINT POTAS COUNT	SCK	URANIUM OXIDE	U3O8
SCINT TRHOR COUNT	SCTh	VANADIUM	V
SCINT TOTAL COUNT	STC	VANADIUM PENTOXIDE	V2O5
SCINT URAN COUNT	SCU	WATER ALKALINITY	H2OAK
SELENIUM	Se	WATER HARDNESS	H2OHd
SILICA	SiO2	WATER LOST AT 110C	H2O-
SILICA AS QUARTZ	SiQTz	WATER LOST AT 1000C	H2O+
SILICON	Si	XENON	Xe
SILVER	Ag	YTTERBIUM	Yb
SODIUM	Na	YTTRIUM	Y
SODIUM LOSS	NaLss	ZINC	Zn
SODIUM OXIDE	Na2O	ZIRCONIUM	Zr
STRONTIUM	Sr	ZIRCONIUM OXIDE	ZrO2
STRONTIUM OXIDE	SrO		