

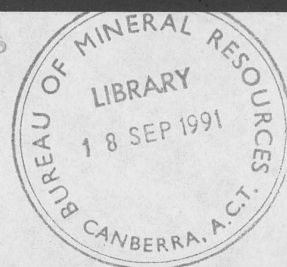
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GEOLOGY AND
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AUSTRALIA

1991/35
C.4

ARUNTA ROCKCHEM DATA SET DOCUMENTATION

RECORD 1991/35

BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)



by R.G. Warren, L.A.I. Wyborn and R.J. Ryburn

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C.4

Mineral Resources, Geology and Geophysics

Arunta

Rockchem Data Set

Documentation

Record 1991/35

by

R.G. Warren, L.A.I Wyborn

and R.J. Ryburn



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DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

Minister: The Hon. Alan Griffiths

Secretary: G.L. Miller

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Executive Director: R.W.R. Rutland AO

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ABSTRACT

ROCKCHEM is the whole rock geochemical data storage system of the Minerals and Land Use Program of the BMR, Geology and Geophysics and utilises the relational database management system ORACLE. This data set contains 793 analyses (both major and trace elements) from the Arunta region. Most samples are located by AMG grid references and/or decimal latitude and longitude. This record describes tables used in ROCKCHEM and defines the fields used within these tables. A short description of the data contained is given and a bibliography of the main references that were generated from the data.

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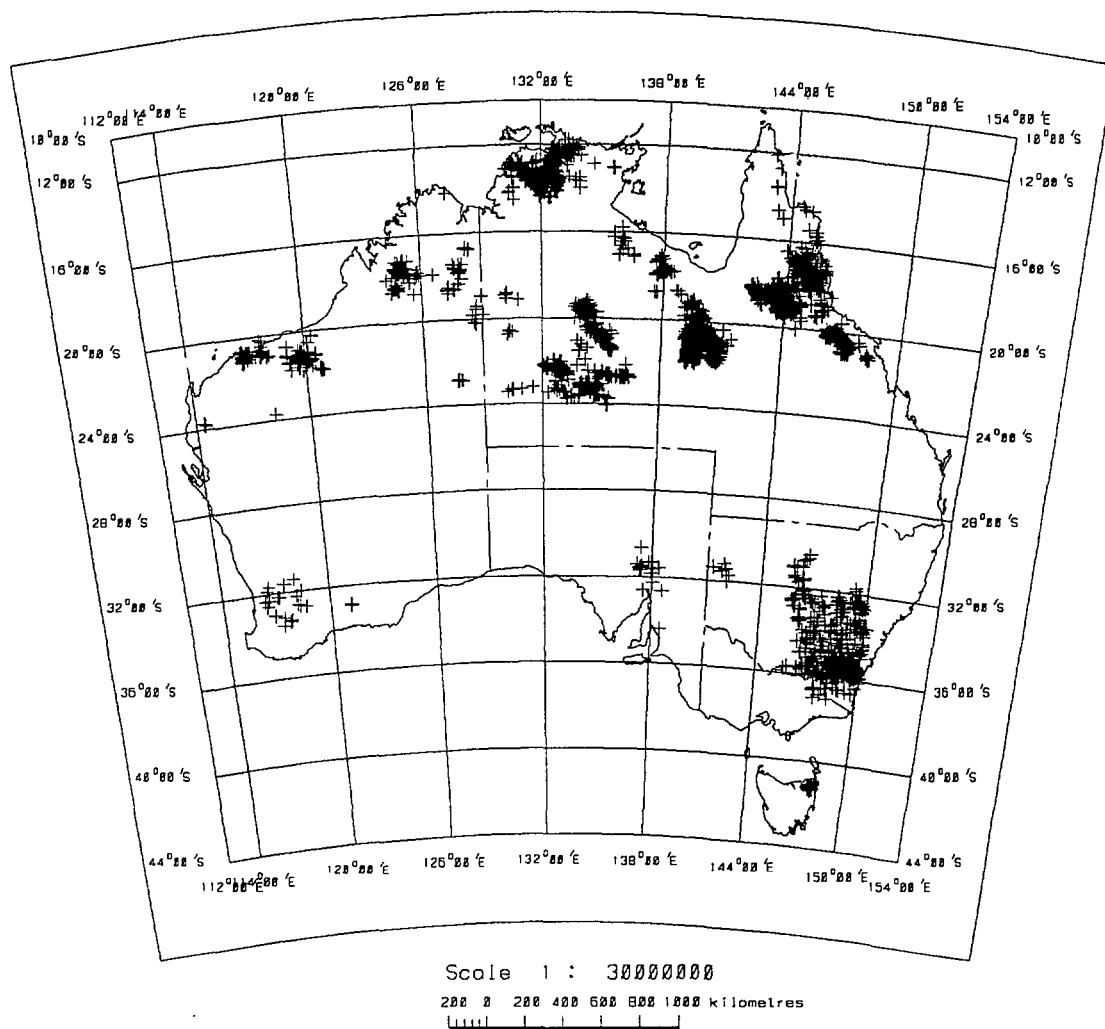


Figure 1. Distribution of Rockchem samples in Australia.

1. INTRODUCTION

ROCKCHEM is the whole-rock geochemical data storage system of the Minerals and Land Use Program of the BMR Geology and Geophysics, Australia. It is based on the commercial relational database management system ORACLE. The complete database contains approximately 17445 analyses from Australia (see Figure 1) and Antarctica, and can be divided into either regional or thematic data sets. The data is currently subdivided into the data sets as listed in Table 1. Most of these data sets will be released by late 1991.

Subset	Areas Covered	No. of Analyses	Coordinator
Regional Databases			
Antarctica	Antarctica	1318	J.W. Sheraton
Arunta	Arunta Block	793	R.G. Warren, L. Wyborn
Lachlan	Lachlan Fold Belt NE Tasmania NW Tasmania	1149 300 40	D. Wyborn
McArthur	McArthur Basin Murphy Tectonic Ridge	533 74	K. Plumb, L. Wyborn
Mount Isa	Mount Isa Inlier	2296	L. Wyborn
NE Queensland	Georgetown Inlier NE Queensland	1940	D.E. Mackenzie
Pilbara	Pilbara Block	1386	A.Y. Glikson
Pine Creek	Pine Creek Inlier	2056	L. Wyborn
South Australian Proterozoic	Stuart Shelf, Adelaide Geosyncline	232	J. Knutson
Tennant Creek	Tennant Creek Inlier Davenport Province	1431 170	L. Wyborn
West Australian Proterozoic	Capricorn Province Granites Tanami Block Halls Creek Block	227 56 164	L. Wyborn
Yilgarn	Yilgarn Block	400	P.R. Williams
Thematic Databases			
Alkaline	Kimberlites Alkaline Rocks	880	A.L. Jaques
EAVS	East Australian Volcanics(Cainozoic)	2000	J. Knutson

Table 1. List of Data Sets in Rockchem.

2. THE ARUNTA DATA SET

This ROCKCHEM data set is a release of approximately 793 analyses from the Arunta region. Figure 2 shows the distribution of the analyses within the data set. Appendix 1 contains listings of the individual components of the data set.

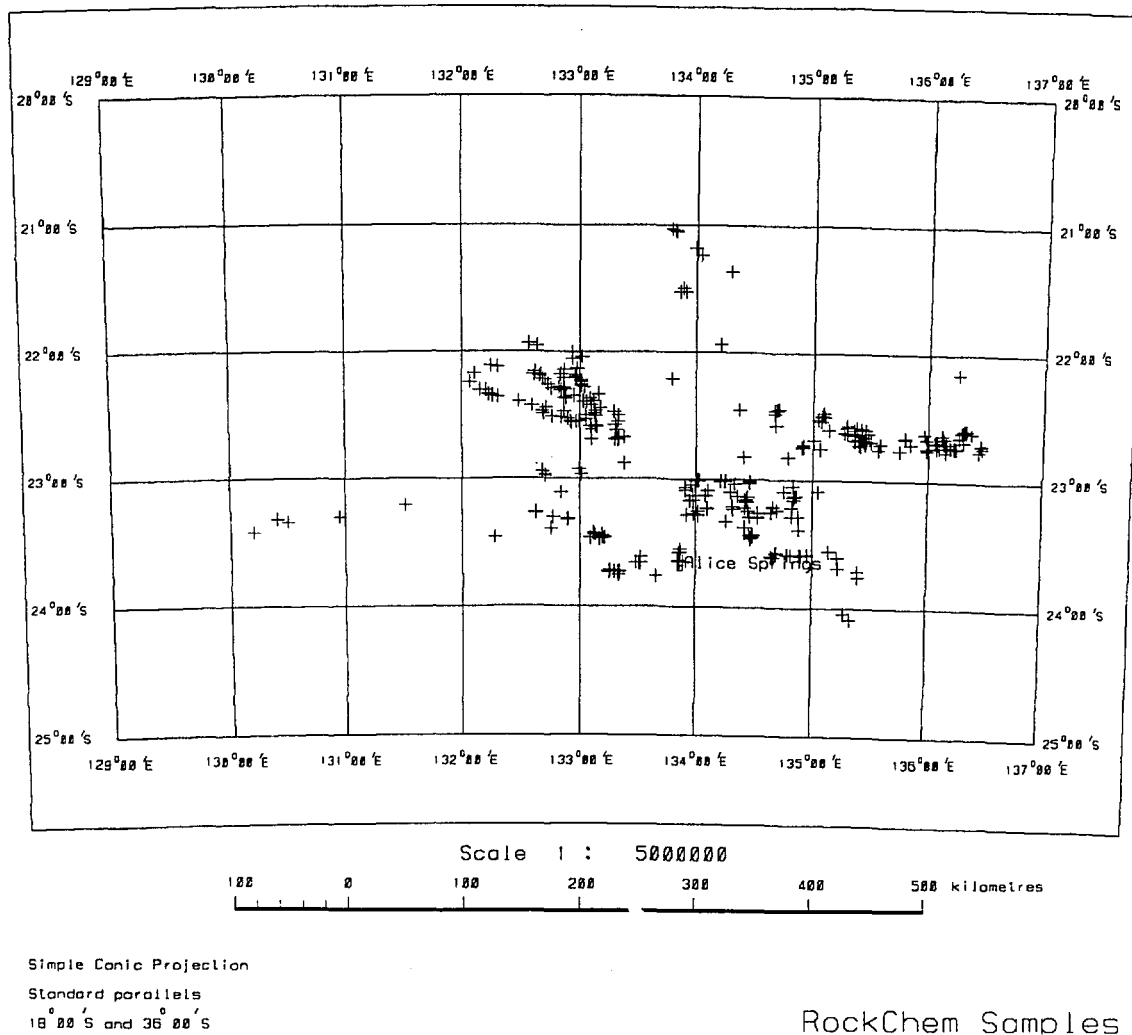


Figure 2. Rockchem Samples in the Arunta Region.

Arunta Block Database

Database type: regional

General Selection Criteria:

Field = regiono *Entry* = 4

Data description:

The 793 samples included in the Arunta Block geochemical database mostly represent the results of regional studies carried out as part of the joint BMR/Northern Territory Geological Survey regional mapping program. Sampling in the Arunta is made difficult by widespread deep weathering; thus the database does not contain any samples collected east of the Tarlton Fault, where exposures are invariably intensely weathered, nor are there many samples from the northwestern region, which is very poorly exposed. The western part of the Arunta is as yet unmapped, and only a few samples from the southwestern area are included, consequently, most of the samples are from east of longitude 132°E.

The rocks represented in the database are predominantly granites from the northern and southern tectonic provinces, and quartzo-feldspathic gneiss from the central zone. Most of the mafic rocks in the collection are mafic granulites from the central province in the Alice Springs 1:250 000 sheet area, but there is a small number of samples from the Attuttra Metagabbro and other mafic rocks in the Huckitta 1:250 000 Sheet area. Very few rocks that were recognized in the field as meta-sediments were collected for geochemistry, however, many of the quartzo-feldspathic gneisses have chemical signatures that indicate some modification from an originally igneous composition, and may represent volcanoclastic rocks.

Future work:

Regional studies in the eastern half of the Arunta Block by BMR are for the present virtually in abeyance. The NGMA program is being directed towards 'frontier' mapping of the western Arunta Block. Some material collected in the eastern Arunta collected as part of joint programs with other research organisations may be added to the database. Extraction from the literature is being continued.

Bibliography:

Warren, R.G., 1989. Geochemical sampling in the Arunta 1980-8. *Bureau of Mineral Resources, Geology and Geophysics, Australia, Record. 1989/54.*

3. STRUCTURE OF THE ROCKCHEM DATABASE

The ROCKCHEM database contains seven main tables of data and eleven associated 'authority' tables. The names of the tables are as follows and full definitions are listed in Appendix 2.

Table Name	Contents
Main Tables	
SAMPLES	Samples and their locations and provenance
SAMPLESPLITS	Sample splits and their storage
MAJORS	Major element analyses in weight percentages of oxides
TRACES	Trace element analyses in parts per million
PPB	Trace element analyses in parts per billion
ROCKPROPS	Density and magnetic rock properties
REFERENCES	Bibliographic references

Authority tables

ORIGINATORS	List of valid contributors
COUNTRIES	List of valid countries
STATES	List of valid Australian States
REGIONS	List of valid regions
HMAPS	List of valid 1:100 000 maps
ROCKTYPES	List of valid rock types
STOREBOXES	List of valid boxes in BMR Museum
SOURCES	List of valid analytical laboratories
METHODS	List of valid analytical methods
MAXNOS	Table for highest index number in the database

The fields in the main tables are described in section 4. The authority tables are described in section 5. They generally consist of a number and a text field. For example, the REGIONS table consists of a region number and a region name (see Appendix 2). The region names in this table are unique. Each region appears once, and only once, in this table, and nowhere else in the database. The SAMPLES table refers ('relates') to the region name via its associated number.

4. DESCRIPTION OF THE MAIN TABLES

4.1 THE SAMPLES TABLE

This table contains information about samples and their provenance. The Samples Block contains the following relational fields - ORIGINATORS, ROCKTYPES, COUNTRIES, STATES, REGIONS, HMAPS, and REFERENCES (up to 5 different references can be entered for each sample). With each authority field, there is an associated table containing the value pointed to by a number or in the case of COUNTRIES, a 3-letter mnemonic. The number (or mnemonic) is the only information stored in the SAMPLES table, the values are stored separately in the relevant authority table.

All fields are either mandatory or optional. All BMR users must enter the mandatory fields before the geochemical data can be entered.

Description of Fields:

Origno - Mandatory relational field of 5 digits. The originator is represented by a number and the full name is recorded in the relational 'ORIGINATORS' table. The originator is generally the person or organization that collects the sample and/or submits it for laboratory work. The main purpose of this field is to ensure a unique combination of originator and sample number.

Sample Number - Mandatory field of 16 characters. Any combination of letters and numbers may be entered, provided that it is unique to the originator. All BMR samples should have registered 8 digit numbers, which should be unique. The first two digits in the BMR sample number refer to the year in which the sample was collected, the next two digits refer to a region in Australia (e.g. Arunta, Pine Creek), and the remaining four numbers are used by individuals belonging to that project at their discretion.

Field Number - Optional field of 16 characters. This field is designed to accommodate any alternative numbering systems that might apply to a sample or group of samples. For example, some samples are given field numbers that differ from the final registered numbers.

Group or Batholith - Optional field of 64 characters, giving the name of the stratigraphic group or igneous batholith from which the sample was collected.

Subgroup or Suite - Optional field of 64 characters, giving the name of the stratigraphic subgroup or igneous suite pertaining to the sample.

Stratigraphic Formation - Optional field of 64 characters, giving the relevant stratigraphic unit at formation level.

Stratigraphic Member - Optional field of 64 characters for the name of a stratigraphic member, if appropriate.

Stratigraphic Height - Optional number field with up to two decimal places. Designed for samples from measured stratigraphic sections.

Map Symbol - Optional field of 10 characters: the letter symbol used on 1:100 000 or 1:250 000 geological maps for the rock unit from which the sample was collected.

Rock Type - Mandatory relational field of 5 digits. See the description of the authority tables for the list of 18 permissible rock types, 1 being 'unknown'.

Lithology - Optional field of 64 characters for a full lithological description.

Grouping - Optional field of 22 characters to allow the user to supply other divisions for samples, for example, the alteration zones of an ore body.

Age - Optional field of 64 characters for the geological age, e.g., late Ordovician. If known, the absolute age is included in brackets, e.g., early Proterozoic (1860 Ma).

References - 5 optional relational numeric fields of 5 digits each. The full reference is listed in the REFERENCES table.

Country - Mandatory relational field of 3 capital letters. The default value is 'AUS'.

State - Relational field of 3 capital letters, mandatory if country is Australia. Only the standard capital letter abbreviations for Australian states can be entered in this field, and it cannot be used for other countries.

Region - Mandatory relational field of 5 digits. Only those regions in the REGIONS table may be entered. A region is a recognised geological province or area such as the Lachlan Fold Belt, Mount Isa Inlier, or Carnarvon Basin. As regions may overlap one another, the region that is entered is dependent on the purpose for which the sample was collected.

Geographic Area - Optional 64 character field for the name of the geographic area (e.g., valley, plain, mountain range) from which the sample comes. Examples are 'Newcastle Range' and 'Tuggeranong Valley'. Another purpose for which this field is used is for subprovinces of major regions (e.g., the Leichhardt River Fault Trough of the Mount Isa Inlier).

Locality - Optional 64 character field for a description of the sample site to aid in its relocation in the field. For example, '5.5km NW of Brown's Bore, on east bank of dry creek'.

1:100 000 Map - Relational field of 4 digits, mandatory if country is Australia. The number supplied must identify one of the standard series 1:100 000 map in the HMAPS table. In insert or update mode, the name may be entered and the number retrieved automatically. Only the map number is stored in the SAMPLES table.

Grid Reference - Field of 6 digits, mandatory if 1:100,000 map name is given. The 6 digit reference required is that described on the face of Australian 1:100 000 maps. The grid reference given must be metric and on the Australian National Spheroid.

Decimal Latitude - Field of 8 digits, mandatory if sample is not from Australia. Up to 6 digits may follow the decimal point. For most samples this field has been entered using a BMR program called 'GetLat', which calculates latitudes and longitudes from the 1:100 000 maps and metric grid references.

North or South - Single character field, 'S' by default. Only 'N' or 'S' may be entered.

Decimal Longitude - Field of 9 digits, 7 of which may follow the decimal point. Otherwise as for latitude.

East or West - Single character field 'E' by default. Only 'E' or 'W' may be entered. Make sure this field is correctly filled in for samples from outside Australia (e.g. Antarctica). It must be given as 'W' for latitudes measured west of the Greenwich Meridian.

Drill Hole - Optional field of 22 characters. If the sample is from a drill hole, its name, or some other identification, is required.

Depth in Metres - Optional field of 10 characters. The depth of the sample from within the drill hole. A character field is used here to enable depth ranges to be entered, e.g., '112- 115' - as some samples are collected from finite depth intervals.

Other Data - Optional field of 64 characters. May be used for any data not covered by the above fields that the originator feels are relevant.

Entry Date - Invisible date field. This field automatically assumes the date that the sample data is inserted into the SAMPLES table via the form.

4.2 THE SAMPLE SPLITS TABLE

This table indicates the sample type (whole rock geochemistry, geochronology, thin section, hand specimen etc.) and the number of the box that the sample is stored in within the BMR museum.

Description of Fields:

Origno - Mandatory relational field of 5 digits. The originator is represented by a number and the full name is recorded in the relational 'Originator Table'. The originator is generally the person or organization that collects the sample and/or submits it for laboratory work. The main purpose of this field is to ensure a unique combination of originator and sample number.

Sample Number - Mandatory field of 16 characters. Any combination of letters and numbers may be entered, provided that it is unique to the originator. All BMR samples should have registered 8 digit numbers, which should be unique. The first two digits in the BMR sample number refer to the year in which the sample was collected, the next two digits refer to a region in Australia (e.g. Arunta, Pine Creek), and the remaining four numbers are used by individuals belonging to that project at their discretion.

Sample Type - Mandatory relational field of 5 digits. The sample type entered must be one of those in the SAMPLETYPES table, e.g., 'whole-rock analysis' or 'geochronology'.

Storebox - Optional numeric field of up to 5 digits. This number must correspond to a Storebox number already in the STOREBOXES table. Although most existing samples do not yet have a storebox number, it is a requirement for all new samples housed in the BMR museum to have a storebox number.

4.3 THE MAJORS TABLE

The majors table contains all of the major element data with all values expressed as weight percentages of oxides.

Description of Fields:

Sample Number - Mandatory field of 16 characters. Any combination of letters and numbers may be entered, provided that it is unique to the originator. All BMR samples should have registered 8 digit numbers, which should be unique. The first two digits in the BMR sample number refer to the year in which the sample was collected, the next two digits refer to a region in Australia (e.g. Arunta, Pine Creek), and the remaining four numbers are used by individuals belonging to that project at their discretion.

Analysis Number - Mandatory field of up to 5 digits. Primary key field assigned by the system; it cannot be inserted or updated. It may be used to query the tables.

Origno - Mandatory relational field of 5 digits. The originator is represented by a number and the full name is recorded in the relational 'Originator Table'. The originator is generally the person or organization that collects the sample and/or submits it for laboratory work. The main purpose of this field is to ensure a unique combination of originator and sample number.

Source Number - Mandatory relational field of up to 5 digits. The 'source' of an analysis is normally the laboratory that performed the analysis or the person or organization that provided the data (e.g., BMR, BMR restricted, BHP, B.W. Chappell). The SOURCES table contains the authority list of all sources.

Method Number - Mandatory relational field of up to 5 digits describing the method by which the laboratory analysis was performed. The details of the analytical techniques used are in the METHODS table.

Major Elements - Optional numeric fields of up to 4 digits, two after the decimal point. Automatically right justified. Detection limit values are entered as negative numbers and it is impossible to enter '<' or 'n.d.'.

***Fe₂O₃** - This field is reserved for total iron as Fe₂O₃. It should be entered only for analyses in which the oxidation state of iron has not been determined. Where this field is entered, the fields for FeO and Fe₂O₃ should be left empty.

Rest - Trace elements are converted to oxide percent, summed and then added to the total.

Total - Optional numeric field of up to 5 digits. This is for an entered total.

Calculated Total - The value in this field is automatically calculated from the data in the major element fields. It cannot be entered and is not a database field. Except where detection limit values are involved, this field provides a check on the entered total;

the two should coincide. Because detection limit values are entered as negative numbers, they are subtracted from the calculated total.

4.4 THE TRACES TABLE

This table includes all trace elements in ppm.

Description of Fields:

Sample Number - Mandatory field of 16 characters. Any combination of letters and numbers may be entered, provided that it is unique to the originator. All BMR samples should have registered 8 digit numbers, which should be unique. The first two digits in the BMR sample number refer to the year in which the sample was collected, the next two digits refer to a region in Australia (e.g. Arunta, Pine Creek), and the remaining four numbers are used by individuals belonging to that project at their discretion.

Analysis Number - Mandatory field of up to 5 digits. Primary key field assigned by the system; it cannot be inserted or updated. It may be used to query the tables.

Origno - Mandatory relational field of 5 digits. The originator is represented by a number and the full name is recorded in the relational 'Originator Table'. The originator is generally the person or organization that collects the sample and/or submits it for laboratory work. The main purpose of this field is to ensure a unique combination of originator and sample number.

Source Number - Mandatory relational field of up to 5 digits. The 'source' of an analysis is normally the laboratory that performed the analysis or the person or organization that provided the data (e.g., BMR, BMR restricted, BHP, B.W. Chappell). The SOURCES table contains the authority list of all sources.

Method Number - Mandatory relational field of up to 5 digits describing the method by which the laboratory analysis was performed. The details of the analytical techniques used are in the METHODS table.

Trace Elements - Optional numeric fields of up to 8 digits, two of which may be after a decimal point. The fields are automatically right justified and as is the case for major elements, a negative entry signifies a detection-limit value.

4.5 THE PPB (parts per billion) TABLE

This table includes all trace elements in ppb.

Description of Fields:

Sample Number - Mandatory field of 16 characters. Any combination of letters and numbers may be entered, provided that it is unique to the originator. All BMR samples should have registered 8 digit numbers, which should be unique. The first

two digits in the BMR sample number refer to the year in which the sample was collected, the next two digits refer to a region in Australia (e.g. Arunta, Pine Creek), and the remaining four numbers are used by individuals belonging to that project at their discretion.

Analysis Number - Mandatory field of up to 5 digits. Primary key field assigned by the system; it cannot be inserted or updated. It may be used to query the tables.

Origno - Mandatory relational field of 5 digits. The originator is represented by a number and the full name is recorded in the relational 'Originator Table'. The originator is generally the person or organization that collects the sample and/or submits it for laboratory work. The main purpose of this field is to ensure a unique combination of originator and sample number.

Source Number - Mandatory relational field of up to 5 digits. The 'source' of an analysis is normally the laboratory that performed the analysis or the person or organization that provided the data (e.g., BMR, BMR restricted, BHP, B.W. Chappell). The SOURCES table contains the authority list of all sources.

Method Number - Mandatory relational field of up to 5 digits describing the method by which the laboratory analysis was performed. The details of the analytical techniques used are in the METHODS table.

Trace Elements - Optional numeric fields of up to 8 digits, 3 of which may be after a decimal point. The fields are automatically right justified and as is the case for major and trace elements, a negative entry signifies a detection-limit value.

4.6 THE REFERENCES TABLE

The bibliographic References Form accesses the REFERENCES table. The authors and year fields are spanned by a concatenated unique index. This means that no two references can have the same values in the author(s) and year fields.

Description of Fields:

Reference Number - Mandatory field of up to 5 digits. A monotonically increasing primary key field assigned by the system. The reference number in the fields in the samples table refer to this field.

Other ID - Optional field of up to 16 characters. Any other identifying sequence that the user may care to apply.

Username - Mandatory field of up to 16 characters.

Authors - Mandatory field of up to 128 characters.

Year - Mandatory field of up to 16 characters.

Title - Optional field of up to 240 characters.

Source - Optional field of up to 240 characters - the journal name, volume and page numbers.

5. DESCRIPTION OF AUTHORITY TABLES

5.1 THE 1:100 000 MAPS FORM

The 1:100 000 maps form table has the underlying HMAPS table as an important table in its own right.

Description of Fields:

100K Map Number - The unique four digit number for any 1:100 000 map sheet from Australia.

IM Map ID - The 1:1 000 000 map sheet in which the 1:100 000 sheet lies. This is identified by two capital letters followed by two numbers, e.g., 'SF54'. The two digits are the UTM zone, which is needed to convert metric references to latitude and longitude.

250K Map Number - Up to 2 digits identifying the 1:250 000 map sheet from 16 covering each 1:1 000 000 map area. The full 1:250 000 map ID is obtained by joining the 1:1 000 000 map ID to this number, e.g., SF54-12, which is the Winton 1:250 000 map sheet, in Queensland. Note that the 1:250 000 map sheets in Tasmania are the theoretical ones, not the shifted ones actually published.

100K Map Name - Up to 22 upper case characters for the name of the 1:100 000 map sheet identified by the 100K Map Number. There are many offshore sheets which are named 'UNNAMED'.

100K Map NW Corner Lat. & Long. - The decimal latitude and longitude of the northwest corner of the 1:100 000 map sheet. It is possible, using a single SQL*Plus command, to make use of this field to select a 1:100 000 map name for any given latitude and longitude.

100K Map AMG Ref. SW Corner Easting and Northing - The metric easting and northing of the southeast corner of the 1:100 000 map sheet. These values are necessary to convert a 6-digit grid reference obtained from a 1:100 000 map to the full Australian Map Grid metres east and metres north.

5.2 COUNTRIES TABLE

This table is for recognised countries. All have an associated ID.

ID	Country
AUS	Australia
PNG	Papua-New Guinea
SI	Solomon Islands
ANT	Antarctica
UK	United Kingdom
SEA	International Waters

5.3 STATES TABLE

This table is for the states of Australia only and all have a set ID.

ID	STATE
???	unknown
ACT	Australian Capital Territory
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
TAS	Tasmania
VIC	Victoria
WA	Western Australia

5.4 ORIGINATOR TABLE

This table refers to the collector of the sample in the field. With some BMR authors, it is possible to refer to original sample note books which are stored within BMR so as to obtain more precise location descriptions of any samples that are of interest.

The following list gives the key for the entries in this authority table.

ORIGNO	ORIGINATOR
1	unknown
2	Blake, D.H.
3	Branch, C.D.
4	Bultitude, R.J.
5	Gardner, C.
6	Croxford, W.
7	Cruikshank, B.I.
8	Hoatson, D.M.
10	Dallwitz, W.B.
11	Derrick, G.M.
12	Duff, B.
13	Ellis, D.J.
14	England, R.N.
15	Ewers, G.R.
16	Warren, R.G.
17	Glikson, A.Y.
18	Tanaka, H.
19	Hill, R.M.
20	Holmes, R.D.
21	Hutton, L.J.

22	Lambert, I.
23	Knutson, J.
24	Jaques, A.L.
25	Chapple, K.
27	Lewis, J.D.
28	Etheridge, M.
29	Mackenzie, D.E.
30	McNaughton, N.
31	Mitchell, J.M.
32	Mock, C.M.
33	Higgins, N.C.
34	Oversby, B.S.
35	Cook, P.
36	Stuart-Smith, P.G.
37	Page, R.W.
38	Plumb, K.A.
39	Valenta, R.
40	Needham, R.S.
41	Santul, J.
42	Sheraton, J.W.
43	Smith, S.E.
44	Tunks, A.
45	Wallace, D.A.
46	Willmott, W.F.
47	Wilson, I.H.
48	Withnall, I.W.
49	Wyborn, D.
50	Wyborn, L.A.I.
51	Bain, J.H.C.
52	Johnson, R.W.
53	Williams, P.R.
54	Miller, A.
55	Bettenay, L.
56	Black, L.P.
57	Pederson, C.P.
58	Ferguson, J.
59	Hegge, M.R.
60	Wilkes, P.G.
61	Roberts, W.M.B.
62	Walpole, B.
63	Joplin, G.
64	Crick, I.
65	Hills, J.
66	Rhodes, J.
67	Smart, P.
68	Sweet, I.P.
69	Shaw, R.D.
70	Stewart, A.J.
71	Wyche, S.
72	Watchman, A.
73	Stuart, J.E.
74	Stratton, J.
75	Duggan, M.B.
76	Yeates, A.N.
77	ANU RSES
78	Allen, A.R.
79	Bofinger, V.M.
80	Gee, R.D.
81	De Laeter, J.R.

82	Cooper, J.A.
83	Williams, S.J.
84	Windrim, D.P.
85	Gray, C.M.
86	Ludwig, K.R.
87	Currie, K.L.
88	Chin, R.J.
89	Mortimer, G.E.
90	Marjoribanks, R.W.
91	Webb, A.W.
92	Langworthy, A.P.
93	SADME
94	Jagodzinski, E.A.
95	Compston, W.
96	Freeman, M.J.
97	Offe, L.A.
98	Bagas, L.
99	Joklik, G.F.
100	Korsch, R.
101	Dobos, S.K.
102	Foden, J.D.
103	Roarty, M.J.
104	Pidgeon, R.T.
105	W.A. Geological Survey
106	Southgate, P.N.
107	Kralik, M.
108	Richards, J.R.
109	McDougall, I.
110	Turek, A.
111	Collins, W.J.
112	Kinny, P.D.
113	Heinrich, C.A.
114	Hill, R.I.
115	Henderson, G.A.M.
116	Johnston, C.
117	Richards, D.
118	Bailey, J.
119	Blewett, R.S.
120	Chappell, B.W.C.
121	Adams, C.J.
122	Turner, N.J.
123	Perason, P.J.
124	Rao, C.P.
125	McCulloch, M.T.
126	Vanderhor, F.
127	Rattenbury, M.S.
128	Young, D.N.
129	Arriens, P.A.

5.5 REGIONS TABLE

The following list of regions was initially compiled from all the existing databases. However, for the purpose of database management, only a select number of major regions are now used for the Australian section of this data set. Those that have been used with the regional databases are marked * in the list below. Most of those Australian regions listed below now entered in the field "Geogarea"; Antarctic regions used are marked +.

REGIONO	REGION
1	unknown
2	Adelaide Fold Belt
3	Albany-Fraser Province
4	Arunta Block *
5	Bunger Hills +
6	Cape York Peninsula
7	Carnarvon Basin
8	Commonwealth Bay +
9	Cummins Range
10	Davenport Province *
11	Denman Glacier +
12	East Kimberley
13	Enderby Land +
14	Gawler Craton
15	George V Land +
16	Georgetown Inlier
17	Halls Creek Inlier *
18	Kemp Land +
19	Lachlan Fold Belt *
20	Lawn Hill Platform
21	Mawson Coast +
22	McArthur Basin
23	Mount Isa Inlier *
24	Northern Prince Charles Mountains +
25	NE Queensland *
26	NE Tasmania
27	NW Tasmania
29	North Victoria Land +
30	North Kimberley
31	Pilbara Block *
32	Pine Creek Inlier *
33	Prydz Bay Coast +
34	Southern Prince Charles Mountains +
35	Stuart Shelf *
36	Granites-Tanami Block *
37	Tasman Fold Belt
38	Tasmania
39	Tennant Creek *
40	Turee Creek
41	Tuross
42	Vestfold Hills +
43	West Kimberley
44	Wilhelm II Land +
45	Wilkes Land +
46	Willyama Block
47	Yilgarn Block
48	Hammersley Basin
49	SE Tasmania
50	SW Tasmania
51	New Georgia Island
52	Eastern Goldfields
53	Capricorn Orogen *
54	Ashburton Trough
55	Gascoyne Province
56	Glengarry Sub-basin
57	Earaheedy Sub-basin
58	Murphy Tectonic Ridge

59	South Nicholson Basin
60	Westmoreland Region
61	New England Fold Belt
62	Sydney Basin
63	Admiralty Islands
64	Birrindudu Basin
65	Bangemall Basin
66	Musgrave Block
67	Paterson Province
68	Amadeus Basin
69	Ammaroodinna Inlier
70	Peake Denison Inlier
72	Georgina Basin
73	Curnamona Inlier
74	Carpentaria Province
75	Northampton Block
76	Houghton Inlier
77	Bougainville
78	Tabar-Feni
79	New Britain
80	St. Andrews Strait
81	Fly Highlands
82	Manus Basin
83	Eastern Papua
84	Officer Basin
85	Woodlark Basin

5.6 ROCK TYPES TABLE

This table provides a coarse subdivision of samples based on broad rock types. It was initiated primarily for database management and block retrieval, and for future online extraction of data. For example, this table can be used to extract all mafic extrusive rocks from the database or all alkaline rocks. The following gives a list of the 18 permitted rock types:

ROCKNO	ROCKTYPE
1	unknown
2	felsic intrusive
3	intermediate intrusive
4	mafic intrusive
5	felsic extrusive
6	intermediate extrusive
7	mafic extrusive
8	ultramafite
9	alkaline igneous
10	clastic sediment
11	chemical sediment
12	metabasite
13	felsic gneiss
14	metasediment
15	metasomatite
16	ore
17	regolith
18	mixed clastic/chemical sediment

5.7 SAMPLE TYPES TABLE

This table gives an indication of the nature of work that has been carried out on each individual sample.

SAMPLETYPENO	SAMPLETYPE
1	unknown
2	whole-rock geochemistry
3	geochronology
4	hand specimen
5	thin section
6	geochronology K-Ar
7	geochronology Ar-Ar
8	geochronology Rb-Sr
9	geochronology Sm-Nd
10	geochronology U-Pb minerals
11	geochronology U-Pb SHRIMP
12	geochronology Pb-Pb
13	geochronology Pb-Pb ores
14	geochronology Lu-Hf
15	geochronology Re-Os
16	geochronology fission-track
17	geophysical properties
18	geochemical rock chip samples

5.8 SOURCES TABLE

This table gives the laboratory or organisation which analysed the sample.

SOURCENO	SOURCE
1	unknown
2	ANU
3	Adelaide University
4	AMDEL
5	BMR
6	BMR restricted
7	CSIRO/BMR
8	Macquarie University
9	Melbourne University
10	NTGS (AMDEL)
11	WA Govt. Chem. Lab.
12	WA/BMR Restricted
13	University of Queensland
14	James Cook University of North Queensland
15	Tasmanian Department of Mines
16	University of Tasmania
17	Queensland Department of Mines
18	BGR (Bundesanstalt fur Geowissenschaften und Rohstoffe)
19	Labtech Pty. Ltd., WAIT, WA Govt. Chem. Lab., Perth.
20	Institute for Petrology, Copenhagen University, Denmark
21	ANALABS
22	BMR/CRAE - T.Stachel

5.9 METHODS TABLE

This table describes the analytical methods used in deriving the analyses.

METHODNO	METHOD
1	unknown
2	XRF (Norrish & Hutton, 1969); FeO Vol.; LOI Grav.
3	XRF (Norrish & Hutton, 1969); FeO Vol.; H ₂ O+, H ₂ O-, & CO ₂ Grav.
4	XRF (Norrish & Chappell, 1977); Ag, Be, Co, Li by AAS
5	XRF (Norrish & Chappell, 1977); Ag, Be, Co, Cu, Li, Ni, Zn by AAS
6	XRF (Norrish & Hutton, 1969); FeO, H ₂ O(total), CO ₂ by AMDEL
7	XRF (Norrish Chappell 1967); Li Be Cr Co Ni Cu Zn Sn AAS F AMDEL
8	Rb, Sr by XRF (Norrish & Chappell, 1967); Ni, Co, V by AAS
9	XRF (Norrish & Chappell, 1977); FeO vol.; LOI grav.
10	XRF (N & C, 1977); REE Hf Ta Cr Sc Sb Cs INA; Th U Gamma spectrm
11	XRF (N & C, 1977); REE Hf Ta Sb Cs INAA; U delayed neutron count
12	XRF (Norrish & Chappell, 1977).
13	XRF (Norrish & Chappell, 1977); Co Cu Ni Pb Zn by emiss.
14	ICP,AES Inductively Coupled Plasma, Atomic Emission
15	XRF (N & C, 1977) at ANU; Na, K by AAS (JCUNQ).
16	XRF(N&C 1977) UQ; REE Th U Pb Hf Ba Cs Sn Mo Nb Y Bi W MS7 RSES.
17	AMDL 'wet' chem. +/- XRF (N & H, 1969)?
18	Tas. Dept. Mines Assay Labs Launceston: "classical methods".
19	J. Klominsky & D.I. Groves: X-ray spectrography.
20	XRF (Norrish & Chappell, 1977); REE,Sc,Hf,Th,U INAA
21	XRF (N & C, 1977); REE ion-exchange/XRF (Robinson & others,1986)
22	AMACHEM Nickel sulfide assay- neutron activation.
23	XRF (Norrish & Hutton, 1969) on 1:1 purified silica mix
24	AAS
25	ANALABS: fire assay, Pb collection, carbon rod finish (30g samp)
26	ANALABS: fire assay fusion, AAS finish (30g sample)
27	ANALABS: combination of methodno = 25 (Pd & Pt) and 26 (Au)
28	RNAA from Melbourne University
29	ANALABS: fire assay, lead collection; ICP-MS finish
30	Direct-reading optical spectrograph (DROS), BMR.

Appendix 1 - Listings of the components of the Arunta data set.

A1.1 Samples assigned to Stratigraphic Groups.

STRATGROUP	COUNT (*)
unassigned	516
Alarinjela Igneous Complex	8
Alkaline Igneous Complex	8
Harts Range Group	10
Harverson Complex	1
Hatches Creek Group	3
Reynolds Range Group	6
Strangways Metamorphic Complex	71

A1.2 Samples assigned to Subgroups.

SUBGROUP	COUNT (*)
unassigned	623

A1.3 Samples assigned to Stratigraphic Units.

STRATUNIT	COUNT (*)
unassigned	95
Aileron Metamorphics	9
Airy Orthogneiss	2
Ali Curung Complex	6
Alice Springs Granite	3
Aloolya Granite	1
Anmatjira Orthogneiss	10
Atnarpa Igneous Complex	14
Atneeqa Granitic Complex	4
Attutra Metagabbro	9
Barrow Creek Granite	5
Bleechmore Granulite	2
Bonya metamorphics	26
Boothby Orthogneiss	4
Brady Gneiss	1
Bruna Gneiss	1
Bungitina metamorphics	8
Burt Bluff Gneiss	3
Cackleberry Metamorphics	3
Cadney Metamorphics	12
Casey Bore Granite	2
Charles River Gneiss	3
Coniston Schist	5
Copia Granite	4
Delmore Metamorphics	1
Dneiper Granite	5
Entia Gneiss	4

Erontonga metamorphics	76
Gumtree Granite	2
Harry Anorthositic Gabbro	24
Harverson Granite	3
Huckitta Granodiorite	4
Ilappa Dyke Swarm	1
Inkamulla Granodiorite	2
Jervois Granite	17
Jervois Granite ?	2
Jinka Granite	4
Johannsen Metagabbro	10
Kanandra Granulite	8
Lander Rock beds	2
Marshall Granite	2
Mascotte Gneiss	1
Mini Mordor	1
Mordor Igneous Complex	25
Mount Chapple granulite	6
Mount Hay Granulite	12
Mount Ida Granite	2
Mount Strzeleckie Volcanics	3
Mount Swan Granite	2
Mud Tank Carbonatite	10
Napperby Orthogneiss	22
Ngalurbindi Orthogneiss	2
Ongeva Granulite	7
Oolbra orthogneiss	1
Pd	1
Perenti Metamorphics	2
Pgc	2
Pgg?	1
Pgk	3
Pgk?	1
Pgp	11
Pgr	1
Pgy	5
Possum Creek Charnockite	4
Queenie Flat Orthogneiss	1
Riddock Amphibolite	7
Sliding Rock Metamorphics	4
Stuart Dyke Swarm	5
Uldirra Porphyry	1
Unammed pegmatite	1
Unca Granite	2
Unnamed granite	1
Utralanama granulite	23
Wangala Granite	6
Warimbi Schist	4
Woodgreen Granite	2
Wuluma granitoid	2
Xanten Granite	1
Yakalibadgi Microgranite	3
Yamba granulite	10
Yaningidjara Orthogneiss	5
pC	2
pCi	1
pCm	1
pCsf	6
pCsp	1

pCu	4
pCx	1
unnamed granite	4

A1.4 Samples assigned to Stratigraphic Members.

STRATMEMBER	COUNT (*)
unassigned	612
Jinka Granite	2
Kings Legend Amphibolite	5
Samarkand Pegmatite	2
pCsf	1

A1.5 Samples assigned by Rocktype.

ROCKNO	ROCKTYPE	COUNT (*)
1	unknown	5
2	felsic intrusive	195
3	intermediate intrusive	13
4	mafic intrusive	15
5	felsic extrusive	5
7	mafic extrusive	3
8	ultramafite	8
9	alkaline igneous	22
11	chemical sediment	1
12	metabasite	115
13	felsic gneiss	160
14	metasediment	52
15	metasomatite	29

A1.6 Samples assigned by Chronological Age.

AGE	COUNT (*)
unassigned	581
early Proterozoic	16
late Proterozoic	1
late Proterozoic (1200 Ma)	13
middle Proterozoic (1210 Ma)	12

A1.7 Samples assigned by Geographic Area.

GEOGAREA	COUNT (*)
unassigned	548
Central Zone	50
Hermannsberg 250 000	24
Mordor Complex	1
Northern Zone	1
Southern Zone	5

A1.8 Samples assigned to 1:100 000 Map Sheet Areas.

MAPNAME	MAPNO	COUNT (*)
AILERON	5552	23
ALCOOTA	5752	2
ALICE SPRINGS	5650	15
ANBURLA	5551	19
BARROW	5654	4
BURT	5651	11
CRAWFORD	5655	8
DELNY	5852	7
DENISON	5353	12
DNEIPER	5952	31
EHRENBERG	4951	2
FERGUSON RANGE	5850	15
HAAST BLUFF	5251	2
HERMANNSBURG	5450	1
HOME OF BULLION	5754	1
JERVOIS RANGE	6152	63
JINKA	6052	13
KUTA KUTA	5051	1
LAUGHLIN	5751	223
LIMBLA	5950	5
MACDONALD DOWNS	5953	4
MACDONNELL RANGES	5550	12
MOUNT PEAKE	5454	6
NAPPERBY	5452	17
NARWIETOOMA	5451	15
QUARTZ	5951	18
RENNIE	4850	5
REYNOLDS RANGE	5453	31
RIDDOCH	5851	20
TAYLOR	5755	2
TEA TREE	5553	19
TODD	5949	2
UNDOOLYA	5750	1
UTOPIA	5853	7
WOODGREEN	5753	2
WOOLLA	5653	1

A1.9 Samples assigned to Drillholes.

DRILLHOLE	COUNT (*)
unassigned	595
BMR Hermannsberg 42	1
BMR Napperby 8	1
BMR Napperby 9	1
DD5	1
DDHA	8
DDHB	4
DDHD	2
MMD H1	1
UC4	9

Appendix 2 - Rockchem database definitions

A2.1 Samples Table Description:

```
CREATE SPACE DEFINITION SPACE_GCSAMPLES
```

```
    DATAPAGES    ( INITIAL      2000,
                  INCREMENT    500,
                  MAXEXTENTS   9999,
                  PCTFREE      25    )
    INDEXPAGES   ( INITIAL      200,
                  INCREMENT    100,
                  MAXEXTENTS   9999  )
```

```
    PARTITION C;
```

```
CREATE TABLE SAMPLES (
```

ORIGNO	NUMBER	(5,0)	NOT NULL,
SAMPNO	CHAR	(16)	NOT NULL,
FIELDNO	CHAR	(16),	
STRATGROUP	CHAR	(64),	
SUBGROUP	CHAR	(64),	
STRATUNIT	CHAR	(64),	
STRATMEMBER	CHAR	(64),	
STRATHEIGHT	NUMBER	(8,2),	
MAPSYMBOL	CHAR	(10),	
ROCKNO	NUMBER	(5,0),	
LITHOLOGY	CHAR	(64),	
GROUPING	CHAR	(22),	
AGE	CHAR	(64),	
REFNO1	NUMBER	(5,0),	
REFNO2	NUMBER	(5,0),	
REFNO3	NUMBER	(5,0),	
REFNO4	NUMBER	(5,0),	
REFNO5	NUMBER	(5,0),	
COUNTRYID	CHAR	(22),	
STATE	CHAR	(10),	
REGIONO	NUMBER	(5,0),	
GEOGAREA	CHAR	(64),	
LOCALITY	CHAR	(64),	
MAPNO	NUMBER	(5,0),	
AIRPHOTO	CHAR	(22),	
GRIDREF	CHAR	(10),	
DLAT	NUMBER	(8,6),	
NS	CHAR	(1),	
DLONG	NUMBER	(9,6),	
EW	CHAR	(1),	
DRILLHOLE	CHAR	(22),	
DEPTH	CHAR	(10),	
OTHERDATA	CHAR	(64),	
ENTRYDATE	DATE)

```
SPACE SPACE_GCSAMPLES;
```

```
CREATE UNIQUE INDEX ORIGSAMP ON SAMPLES ( ORIGNO, SAMPNO );
```

```
CREATE INDEX SAMPLENO ON SAMPLES ( SAMPNO );
```

```
CREATE INDEX REGIONS ON SAMPLES ( REGIONO );
```

```
CREATE          INDEX HMAPS ON SAMPLES ( MAPNAME );
```

A2.2 Samplesplits Table description:

```
CREATE SPACE DEFINITION SPACE_GCSPLITS
```

```
    DATAPAGES    (  INITIAL      500,
                   INCREMENT    250,
                   MAXEXTENTS  9999,
                   PCTFREE      25   )
    INDEXPAGES    (  INITIAL      150,
                   INCREMENT    100,
                   MAXEXTENTS  9999   )
```

```
    PARTITION C;
```

```
CREATE TABLE SAMPLES (
```

```
    ORIGNO          NUMBER          (5,0)      NOT NULL,
    SAMPNO          CHAR            (16)        NOT NULL,
    SAMPTYPENO      NUMBER          (5,0)      NOT NULL,
    STOREBOXNO      NUMBER          (5,0)      )
```

```
SPACE SPACE_GCSPLITS;
```

```
CREATE INDEX SAMPORIG ON SAMPLESPLITS ( ORIGNO, SAMPLENO );
```

```
CREATE INDEX SPLITYPE ON SAMPLESPLITS ( SAMPTYPENO );
```

A2.3 Majors Table description:

```
CREATE SPACE DEFINITION SPACE_GCMAJORS
```

```
    DATAPAGES    (  INITIAL      1000,
                   INCREMENT    400,
                   MAXEXTENTS  9999,
                   PCTFREE      10   )
    INDEXPAGES    (  INITIAL      200,
                   INCREMENT    100,
                   MAXEXTENTS  9999   )
```

```
    PARTITION C;
```

```
CREATE TABLE MAJORS (
```

```
    ORIGNO          NUMBER          (5,0)      NOT NULL,
    SAMPNO          CHAR            (16)        NOT NULL,
    ANALNO          NUMBER          (5,0)      NOT NULL,
    SOURCENO        NUMBER          (5,0),
    METHODNO         NUMBER          (5,0),
    SIO2            NUMBER          (4,2),
    TIO2            NUMBER          (4,2),
    AL2O3           NUMBER          (4,2),
    FE2O3TOT        NUMBER          (4,2),
    FE2O3           NUMBER          (4,2),
    FEO             NUMBER          (4,2),
    MNO             NUMBER          (4,2),
    MGO             NUMBER          (4,2),
    CAO             NUMBER          (4,2),
    NA2O            NUMBER          (4,2),
    K2O             NUMBER          (4,2),
    P2O5            NUMBER          (4,2),
    H2OPLUS         NUMBER          (4,2),
```

```

H2OMIN          NUMBER          (4,2),
CO2              NUMBER          (4,2),
LOI              NUMBER          (4,2),
REST            NUMBER          (4,2),
TOTAL           NUMBER          (5,2),
ENTRYDATE       DATE
SPACE SPACE_GCMAJORS;

CREATE UNIQUE INDEX MANALNO ON MAJORS ( ANALNO );
CREATE          INDEX MORIGSAMP ON MAJORS ( ORIGNO, SAMPNO);
CREATE          INDEX MSAMPLENO ON MAJORS ( SAMPNO );

```

A2.4 Traces Table Description:

```

CREATE SPACE DEFINITION SPACE_GCTRACES
  DATAPAGES    ( INITIAL      1200,
                 INCREMENT    400,
                 MAXEXTENTS   9999,
                 PCTFREE      30   )
  INDEXPAGES   ( INITIAL      200,
                 INCREMENT    100,
                 MAXEXTENTS   9999 )
  PARTITION C;

CREATE TABLE TRACES    (
  ORIGNO          NUMBER          (5,0)          NOT NULL,
  SAMPNO          CHAR           (16)            NOT NULL,
  ANALNO          NUMBER          (5,0)          NOT NULL,
  SOURCENO        NUMBER          (5,0),
  METHODNO         NUMBER          (5,0),
  AG              NUMBER          (8,2),
  AL              NUMBER          (8,2),
  ARS             NUMBER          (8,2),
  AU              NUMBER          (8,2),
  B               NUMBER          (8,2),
  BA              NUMBER          (8,2),
  BE              NUMBER          (8,2),
  BI              NUMBER          (8,2),
  BR              NUMBER          (8,2),
  C               NUMBER          (8,2),
  CA              NUMBER          (8,2),
  CD              NUMBER          (8,2),
  CE              NUMBER          (8,2),
  CL              NUMBER          (8,2),
  CO              NUMBER          (8,2),
  CR              NUMBER          (8,2),
  CS              NUMBER          (8,2),
  CU              NUMBER          (8,2),
  DY              NUMBER          (8,2),
  ER              NUMBER          (8,2),
  EU              NUMBER          (8,2),
  F               NUMBER          (8,2),
  FE              NUMBER          (8,2),
  GA              NUMBER          (8,2),

```


GE	NUMBER	(8,2),
GD	NUMBER	(8,2),
HF	NUMBER	(8,2),
HG	NUMBER	(8,2),
HO	NUMBER	(8,2),
IR	NUMBER	(8,2),
K	NUMBER	(8,2),
LA	NUMBER	(8,2),
LI	NUMBER	(8,2),
LU	NUMBER	(8,2),
MG	NUMBER	(8,2),
MN	NUMBER	(8,2),
MO	NUMBER	(8,2),
NA	NUMBER	(8,2),
NB	NUMBER	(8,2),
ND	NUMBER	(8,2),
NI	NUMBER	(8,2),
OS	NUMBER	(8,2),
P	NUMBER	(8,2),
PB	NUMBER	(8,2),
PD	NUMBER	(8,2),
PR	NUMBER	(8,2),
PT	NUMBER	(8,2),
RB	NUMBER	(8,2),
S	NUMBER	(8,2),
SB	NUMBER	(8,2),
SE	NUMBER	(8,2),
SC	NUMBER	(8,2),
SI	NUMBER	(8,2),
SM	NUMBER	(8,2),
SN	NUMBER	(8,2),
SR	NUMBER	(8,2),
TA	NUMBER	(8,2),
TB	NUMBER	(8,2),
TE	NUMBER	(8,2),
TI	NUMBER	(8,2),
TH	NUMBER	(8,2),
TL	NUMBER	(8,2),
TM	NUMBER	(8,2),
U	NUMBER	(8,2),
V	NUMBER	(8,2),
W	NUMBER	(8,2),
Y	NUMBER	(8,2),
YB	NUMBER	(8,2),
ZN	NUMBER	(8,2),
ZR	NUMBER	(8,2),
ENTRYDATE	DATE)

SPACE SPACE_GCTRACES;

CREATE UNIQUE INDEX TANALNO ON TRACES (ANALNO);

CREATE INDEX TORIGSAMP ON TRACES (ORIGNO, SAMPNO);

CREATE INDEX TSAMPLENO ON TRACES (SAMPNO);

A2.5 ppb Table Description (elements in parts per billion):

```
CREATE SPACE DEFINITION SPACE_GSMALL
```

```
    DATAPAGES    ( INITIAL      50,
                  INCREMENT    50,
                  MAXEXTENTS  9999,
                  PCTFREE      25    )
    INDEXPAGES   ( INITIAL      20,
                  INCREMENT    12,
                  MAXEXTENTS  9999    )
```

```
    PARTITION C;
```

```
CREATE TABLE PPB    (
```

```
    ORIGNO          NUMBER          (5,0)          NOT NULL,
    SAMPNO           CHAR            (16)           NOT NULL,
    ANALNO           NUMBER          (5,0)           NOT NULL,
    SOURCENO         NUMBER          (5,0),
    METHODNO          NUMBER          (5,0),
    SE               NUMBER          (8,3),
    RB               NUMBER          (8,3),
    RU               NUMBER          (8,3),
    RH               NUMBER          (8,3),
    PD               NUMBER          (8,3),
    AG               NUMBER          (8,3),
    CS               NUMBER          (8,3),
    LA               NUMBER          (8,3),
    CE               NUMBER          (8,3),
    PR               NUMBER          (8,3),
    ND               NUMBER          (8,3),
    PM               NUMBER          (8,3),
    SM               NUMBER          (8,3),
    EU               NUMBER          (8,3),
    GD               NUMBER          (8,3),
    TB               NUMBER          (8,3),
    DY               NUMBER          (8,3),
    HO               NUMBER          (8,3),
    ER               NUMBER          (8,3),
    TH               NUMBER          (8,3),
    YB               NUMBER          (8,3),
    LU               NUMBER          (8,3),
    RE               NUMBER          (8,3),
    OS               NUMBER          (8,3),
    IR               NUMBER          (8,3),
    PT               NUMBER          (8,3),
    AU               NUMBER          (8,3),
    ENTRYDATE        DATE
)
```

```
CREATE UNIQUE INDEX PPBANALNO    ON PPB    ( ANALNO );
```

```
CREATE          INDEX PPBORIGSAMP ON PPB    ( ORIGNO, SAMPNO );
```

```
CREATE          INDEX PPBSAMPLENO ON PPB    ( SAMPNO );
```

A2.6 Rocktypes Table Description:

```
CREATE SPACE DEFINITION SPACE_GSMALL
```

```
    DATAPAGES    ( INITIAL      50,
                  INCREMENT    50,
```

```

                                MAXEXTENTS 9999,
                                PCTFREE     25    )
INDEXPAGES ( INITIAL          20,
            INCREMENT         12,
            MAXEXTENTS       9999 )

PARTITION C;

CREATE TABLE ROCKTYPES (
    ROCKNO          NUMBER          (5,0)      NOT NULL,
    ROCKTYPE        CHAR            (64)       NOT NULL )
SPACE SPACE_GCSMALL;

```

A2.7 References Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES ( INITIAL          50,
                INCREMENT        50,
                MAXEXTENTS       9999,
                PCTFREE          25    )
    INDEXPAGES ( INITIAL          20,
                INCREMENT        12,
                MAXEXTENTS       9999 )

PARTITION C;

CREATE TABLE REFERENCES(
    REFNO          NUMBER          (5,0)      NOT NULL,
    OTHERID        CHAR            (16)
    USERNAME       CHAR            (16)
    AUTHORS        CHAR            (128)
    YEAR           CHAR            (16)
    TITLE          CHAR            (240)
    SOURCE         CHAR            (240)      )
SPACE SPACE_GCSMALL;

CREATE UNIQUE INDEX REFNUMBER ON REFERENCES ( REFNO );
CREATE UNIQUE INDEX REFUNIQUE ON REFERENCES ( AUTHORS, YEAR );

```

A2.8 Originators Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES ( INITIAL          50,
                INCREMENT        50,
                MAXEXTENTS       9999,
                PCTFREE          25    )
    INDEXPAGES ( INITIAL          20,
                INCREMENT        12,
                MAXEXTENTS       9999 )

PARTITION C;

CREATE TABLE ORIGINATORS (
    ORIGNO          NUMBER          (5,0)      NOT NULL,
    ORIGINATOR      CHAR            (22)       NOT NULL )
SPACE SPACE_GCSMALL;

CREATE UNIQUE INDEX ORIGNOS ON ORIGINATORS ( ORIGNO );

```

```
CREATE UNIQUE INDEX ORIGINS ON ORIGINATORS ( ORIGNATOR );
```

A2.9 Regions Table Description:

```
CREATE SPACE DEFINITION SPACE_GSMALL
```

```
    DATAPAGES    (  INITIAL      50,
                   INCREMENT    50,
                   MAXEXTENTS   9999,
                   PCTFREE      25    )
    INDEXPAGES    (  INITIAL      20,
                   INCREMENT    12,
                   MAXEXTENTS   9999    )
```

```
    PARTITION C;
```

```
CREATE TABLE REGIONS (
```

```
    REGIONO          NUMBER          (5,0)      NOT NULL,
    REGION           CHAR            (64)        NOT NULL )
```

```
SPACE SPACE_GCSMALL;
```

```
CREATE UNIQUE INDEX REGIONO    ON REGIONS ( REGIONO );
```

```
CREATE UNIQUE INDEX REGIONAME ON REGIONS ( REGION );
```

A2.10 HMAPS Table Description:

```
CREATE SPACE DEFINITION HMAPS
```

```
    DATAPAGES    (  INITIAL      50
                   INCREMENT    10
                   MAXEXTENTS   9999,
                   PCTFREE      10    )
    INDEXPAGES    (  INITIAL      20
                   INCREMENT    10
                   MAXEXTENTS   9999    )
```

```
    PARTITION C;
```

```
CREATE TABLE HMAPS (
```

```
    HMAPNO          NUMBER          (4,0)
    HMAPID          CHAR            (4)
    QMAPNO          NUMBER          (2,0)
    N_LAT           NUMBER          (3,1)
    W_LONG          NUMBER          (4,1)
    MEAST           NUMBER          (6)
    MNORTH          NUMBER          (7)
```

```
SPACE SP_LOCAL
```

```
CREATE UNIQUE INDEX HMAPNO    ON HMAPS ( HMAPNO );
```

```
CREATE          INDEX HMAPNAME ON HMAPS ( HMAPNAME );
```

```
CREATE          INDEX NLAT    ON HMAPS ( N_LAT );
```

```
CREATE          INDEX WLONG   ON HMAPS ( W_LONG );
```

A2.11 Sampletypes Table Description:

```
CREATE SPACE DEFINITION SPACE_GSMALL
```

```
    DATAPAGES    (  INITIAL      50,
                   INCREMENT    50,
                   MAXEXTENTS   9999,
                   PCTFREE      25    )
    INDEXPAGES    (  INITIAL      20,
```

```

                INCREMENT      12,
                MAXEXTENTS    9999 )
PARTITION C;

CREATE TABLE SAMPLETYPES (
    SAMPLETYPENO      NUMBER      (5,0)      NOT NULL,
    SAMPLETYPE        CHAR        (64)       NOT NULL )
SPACE SPACE_GCSMALL;

```

A2.12 Sources Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES    ( INITIAL      50,
                  INCREMENT     50,
                  MAXEXTENTS    9999,
                  PCTFREE       25 )
    INDEXPAGES   ( INITIAL      20,
                  INCREMENT     12,
                  MAXEXTENTS    9999 )
PARTITION C;

CREATE TABLE SOURCES (
    SOURCENO      NUMBER      (5,0)      NOT NULL,
    SOURCE        CHAR        (64)       NOT NULL )
SPACE SPACE_GCSMALL;

CREATE UNIQUE INDEX SOURCENOS ON SOURCES ( SOURCENO );
CREATE UNIQUE INDEX SOURCES ON SOURCE ( SOURCE );

```

A2.13 Methods Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES    ( INITIAL      50,
                  INCREMENT     50,
                  MAXEXTENTS    9999,
                  PCTFREE       25 )
    INDEXPAGES   ( INITIAL      20,
                  INCREMENT     12,
                  MAXEXTENTS    9999 )
PARTITION C;

CREATE TABLE SOURCES (
    SOURCENO      NUMBER      (5,0)      NOT NULL,
    SOURCE        CHAR        (64)       NOT NULL )
SPACE SPACE_GCSMALL;

CREATE UNIQUE INDEX METHODNO ON METHODS ( METHODNO );
CREATE UNIQUE INDEX METHOD ON METHODS ( METHOD );

```

A2.14 - Storeboxes Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES    ( INITIAL      50,
                  INCREMENT     50,
                  MAXEXTENTS    9999,
                  PCTREE        25 )
    INDEXPAGES   ( INITIAL      20,

```

```

                INCREMENT    12,
                MAXEXTENTS   9999 )
PARTITION C;

CREATE TABLE SOURCES (
    SOURCENO          NUMBER      (5,0)      NOT NULL,
    SOURCE            CHAR        (64)       NOT NULL )
SPACE SPACE_GCSMALL;

CREATE UNIQUE INDEX STOREBOXNOS ON STOREBOXES ( BOXNO );

```

A2.15 Maxnos Table Description:

```

CREATE SPACE DEFINITION SPACE_GSMALL
    DATAPAGES    ( INITIAL      50,
                  INCREMENT     50,
                  MAXEXTENTS    9999,
                  PCTFREE       25 )
    INDEXPAGES   ( INITIAL      20,
                  INCREMENT     12,
                  MAXEXTENTS    9999 )
PARTITION C;

CREATE TABLE SOURCES (
    SOURCENO          NUMBER      (5,0)      NOT NULL,
    SOURCE            CHAR        (64)       NOT NULL )
SPACE SPACE_GCSMALL;

```