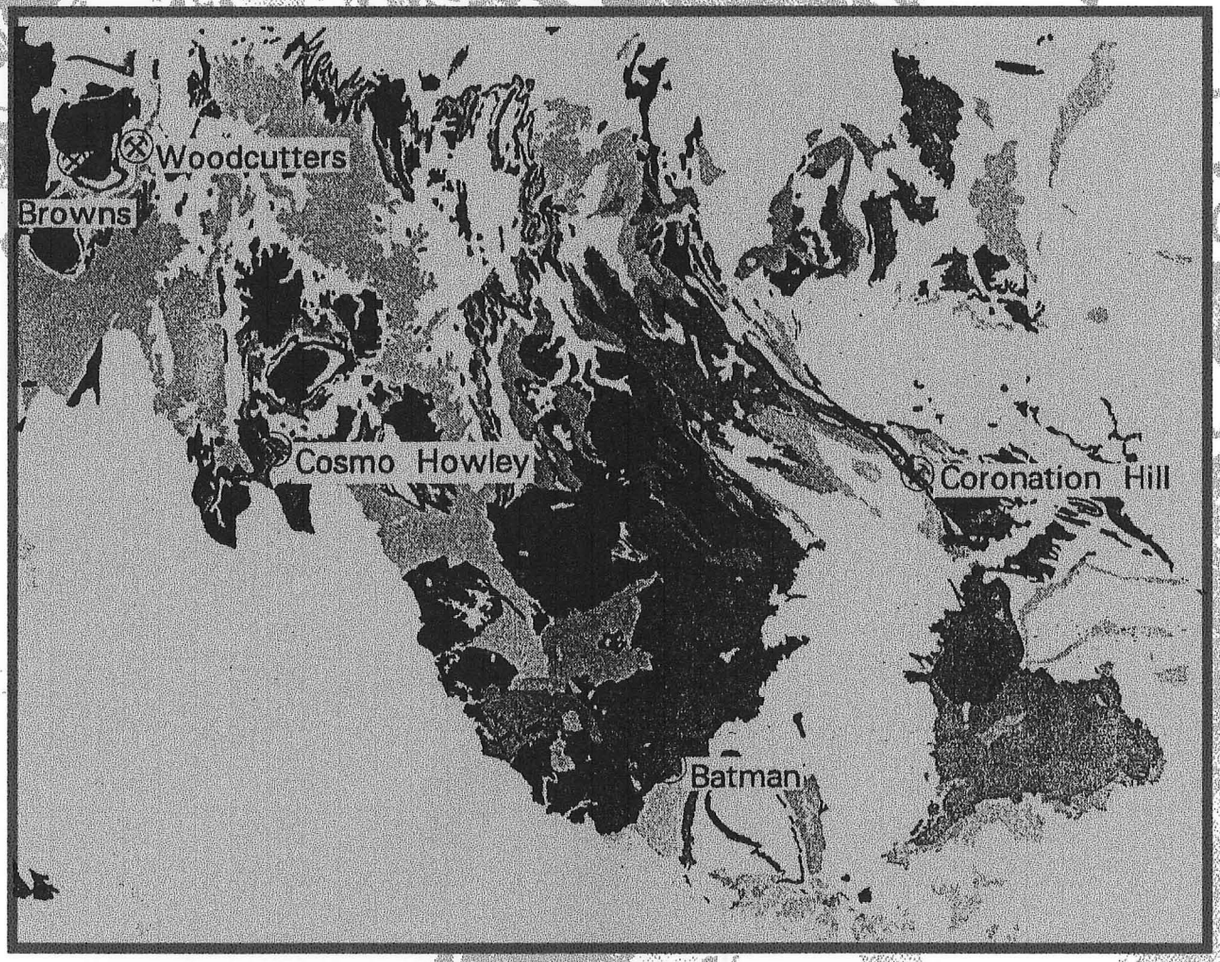
AGSO
AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

OZCHRON '99 DOCUMENTATION

AGSO's National Geochronology Database of Australia

AGSO RECORD 1999/02



by S.M. Edgecombe, M. Hazell, R.W. Page,
L.P. Black, S-S. Sun and R.J. Ryburn

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OZCHRON99 Dataset Documentation

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by S. M. Edgecombe, M. Hazell, R. W. Page, L. P. Black, S-S. Sun and R. J. Ryburn

DEPARTMENT OF INDUSTRY, SCIENCE & RESOURCES

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The Structure of the OZCHRON Database

Section 1—The structure of the OZCHRON Database

1.1 INTRODUCTION

OZCHRON is the geochronological data storage and retrieval system of the Australian Geological Survey Organisation (AGSO). It is a dynamic database that will be continuously updated as volume, variety and quality of geochronological data increase.

Geochronological information on Australian Precambrian and Phanerozoic terranes has been generated over more than 30 years, and the data in OZCHRON have been compiled from a variety of published and unpublished sources. Unpublished ages and interpretations acquired by AGSO under co-operative agreements are also included. OZCHRON summarises the analytical data and resultant ages, and acknowledges the primary source of the data. Comments are also included on the geological relevance and reliability of those ages.

This manual describes the structure of OZCHRON and the purpose of the individual fields. Listings of authority table contents are also included, as well as a complete data dictionary for all tables. The manual has been prepared on the assumption that the purchaser is setting up their own database. In AGSO, OZCHRON is implemented under ORACLE's relational database management system running under the Sun OS 5.6 UNIX operating system on a Sun Systems computer. Those purchasers who acquire the database in ORACLE format may also find useful an AGSO in-house Record by Ryburn, R.J., Page, R.W., & Richards, J.R. 1993, 'User's guide to the OZCHRON database'. *AGSO Record 1993/11.*

This manual has been prepared in loose leaf format so that descriptive data on additional releases, or on new methods can easily be added.

1.2 STRUCTURE OF OZCHRON AND ASSOCIATED DATABASE TABLES

OZCHRON is part of a system of databases (Figure 1.1) set up for the National Geoscience Mapping Accord (NGMA) (Blewett, R. 1993, The NGMA Field Databases-a field guide. *AGSO Record 1993/46*). The central component of these databases is the OZROX Field Geology Database (Figure 1.2) which records all sample attribute data (e.g., location, stratigraphic formation, lithology, etc.). A useful guide to OZROX is the in house record, Ryburn, R.J., Bond, L.D. and Hazell, M.S. 1995, Guide to OZROX AGSO's Field Geology Database).

The OZCHRON database comprises eight main tables for analytical and derived age information for four age determination methods, Rubidium-Strontium (Rb-Sr), Uranium-Lead conventional (U-Pb), Sensitive High Resolution Ion MicroProbe (SHRIMP) Uranium-Lead and Samarium-Neodymium (Sm-Nd). Each age determination can be related back to attribute and locational data in the OZROX database (Figure 1.3), or to information in other databases (e.g., whole rock geochemistry in the OZCHEM database) (Figure 1.1). Authority or lookup tables are used by OZROX and OZCHRON to supply standard values for many fields. These are listed in Tables 1.1 and 1.2 along with the main tables for OZCHRON and OZROX.

Some of these authority tables are combined as database Views, which are listed in Table 1.3. Full definitions are listed in Sections 2, 3 and 4.

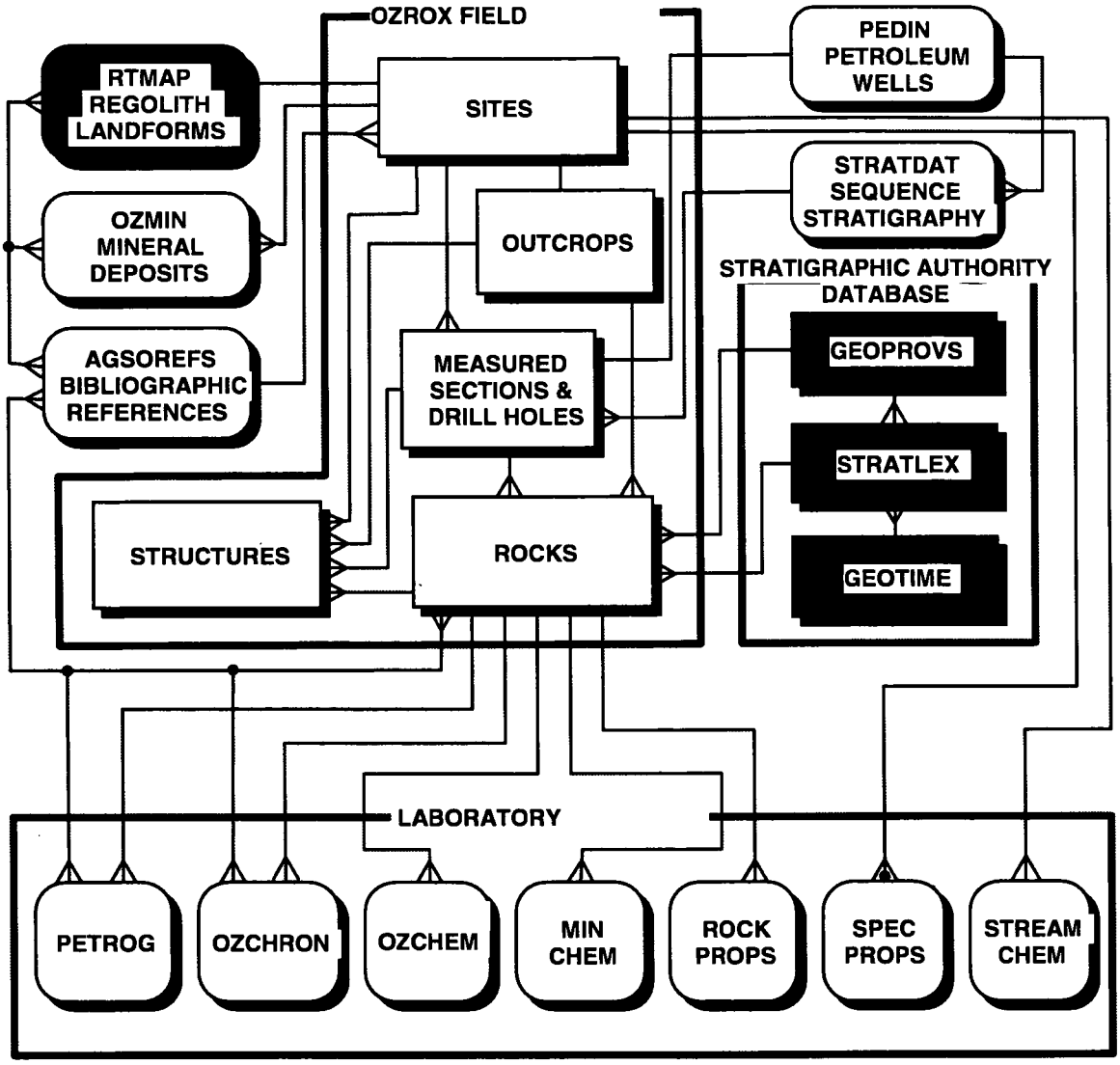


Figure 1.1: A schematic diagram of AGSO's field and laboratory databases showing the relationships between component databases and tables. OZCHRON is one of AGSO's laboratory databases. Locational, lithological and stratigraphic data for samples are accessed through the ROCKS table. The "crows" feet on the lines joining tables indicate the many side of many-to-one links.

Each geochronological method covered by the OZCHRON database employs one or two tables of geochronological data (Figure 1.3). Where a number of analytical results are required to arrive at one age determination, as in Rb-Sr whole-rock isochron work, there are two tables, one for analytical results and one for the pooled age result and interpretation. The analytical results are joined to a pooled-result table by a foreign key field, called AGE_POINTER or RECNO depending on the table.

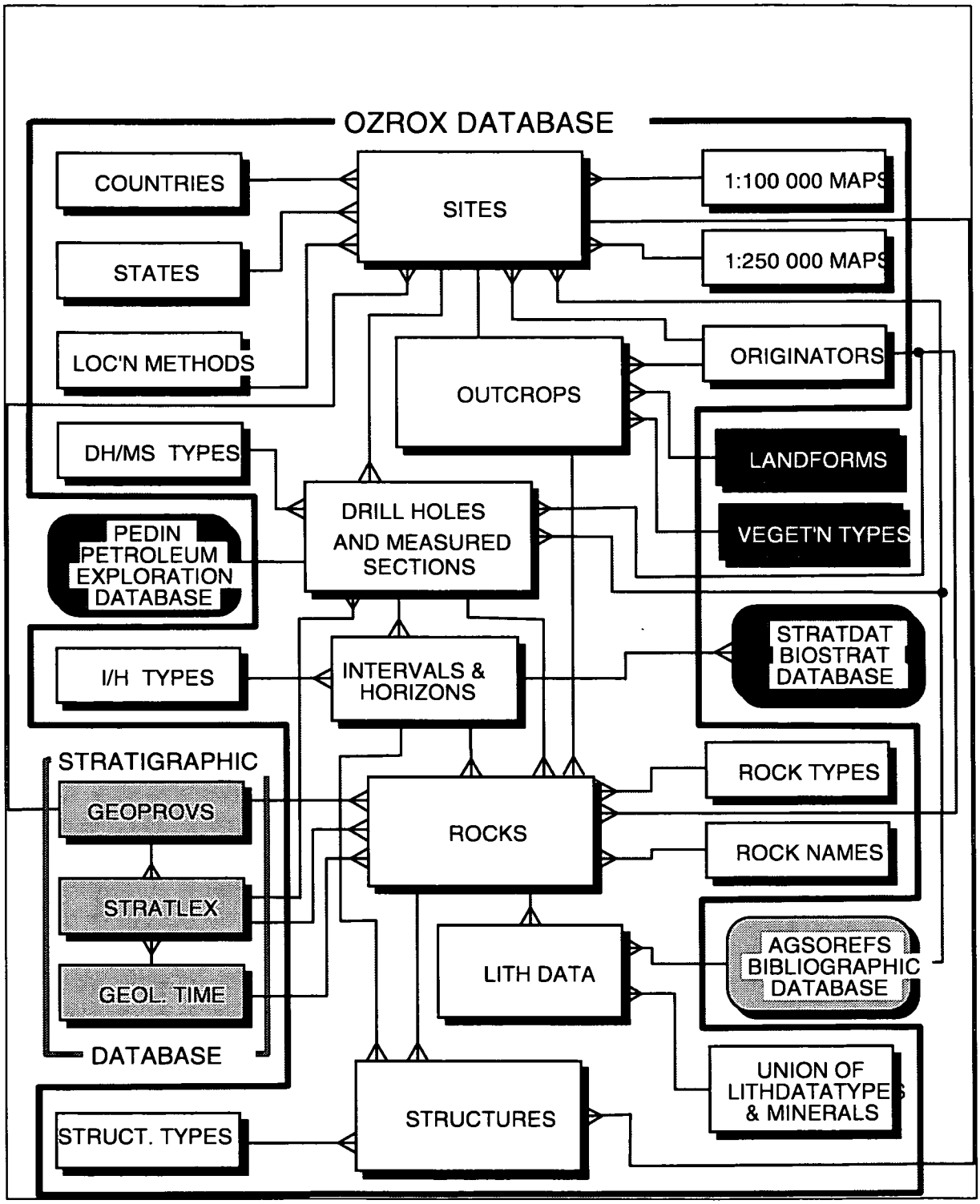


Figure 1.2: A schematic diagram of the OZROX database showing the relationships between component tables and some other AGSO field databases. The "crows" feet on the lines joining tables indicate the many side of many-to-one links.

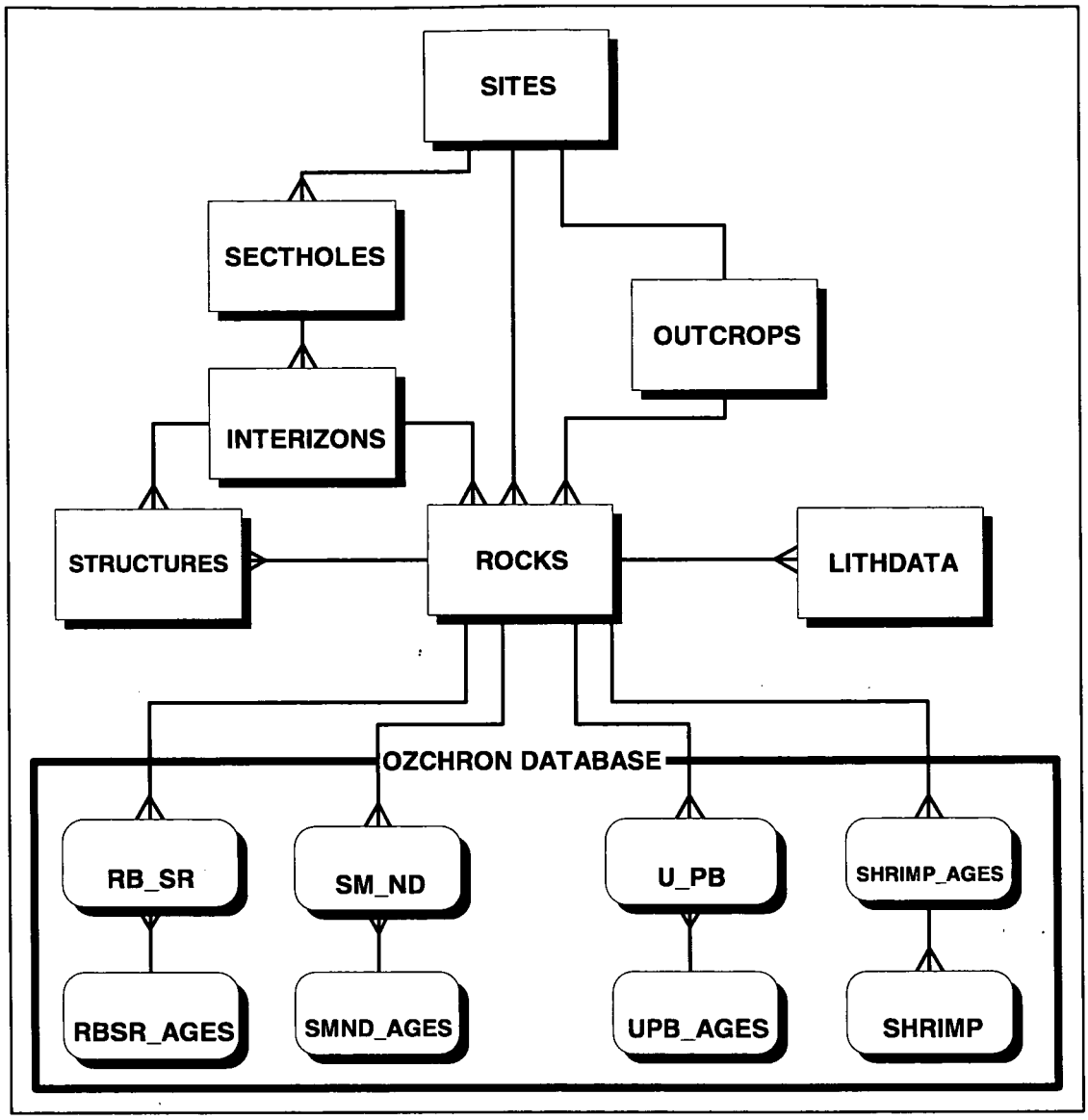


Figure 1.3: A schematic relationship diagram showing the relationships between the OZCHRON tables and the OZROX Field Geology Database. The "crows" feet on the lines joining the tables indicate the many side of many-to-one links.

OZCHRON data can be joined to the sample information in OZROX (Figure 1.2) by a combined primary key on the originator number (ORIGNO) plus sample number (SAMPLEID). The originator is the person/organisation responsible for collecting the sample and/or publishing the results, while the sample number can be any combination of numbers or characters up to 16 characters long. This dual primary key allows published sample numbers to be preserved and obviates the need for an additional numbering system. The only requirement is that the sample numbers from any one originator must be unique within his or her numbering system. OZCHRON data can also be joined to OZROX using the originator number (ORIGNO) plus siteid (SITEID). However while this combination is unique for any site information if more than one sample has been collected at a site then the correct lithology description for the age determination can only be derived using the sample number.

A sample in OZCHRON is therefore fully identified only by a combination of originator number (ORIGNO) and sample number (SAMPLEID). A sample number on its own is usually sufficient to retrieve the required sample, but do not forget that duplicate sample numbers are permitted if the originators are different.

With the exception of the **SHRIMP** table, all analytical tables record both originator number, sample number and siteid. For **SHRIMP** data these are found only in the **SHRIMP_AGES** table (Figure 1.3).

Where necessary, OZCHRON and OZROX draw on information contained in the authority tables listed below in Table 1.2. Some of these tables are shared by other databases and therefore represent standard coding and attribute lists used by AGSO. The owner of each table is that part of the name before the full stop, but within MS Access the owner's name is separated from the table name by an underscore (eg: NGMA.AGSOCOUNTRIES becomes NGMA_AGSOCOUNTRIES). As there is only one owner in MS Access all tables automatically belong to the MS Access system owner ADMIN.

MAIN TABLES

	Table Name	Contents
1	NGMA.SITES	Individual site location data, accuracy and lineage
2	NGMA.OUTCROPS	Outcrop-scale data
3	NGMA.ROCKS	Stratigraphic and lithological data for individual samples
4	NGMA.LITHDATA	Extendable lithological attribute table for rocks
5	NGMA.SECTHOLES	Drill hole or measured section name, and type
6	NGMA.INTERIZONS	Drill hole or measured section interval information
7	NGMA.STRUCTURES	Structural data for rock or drill hole descriptions
8	OZCHRON.RB_SR	Rubidium-Strontium analytical data
9	OZCHRON.RBSR_AGES	Rubidium-Strontium pooled results
10	OZCHRON.U_PB	Uranium-Lead mineral analytical data
11	OZCHRON.UPB_AGES	Uranium-Lead mineral pooled results
12	OZCHRON.SHRIMP	Uranium-Lead ion microprobe analytical data
13	OZCHRON.SHRIMP_AGES	Uranium-Lead ion microprobe pooled results
14	OZCHRON.SM-ND	Samarium-Neodymium analytical data
15	OZCHRON.SMND_AGES	Samarium-Neodymium pooled results

Table 1.1 List of main tables in OZROX and OZCHRON.

AUTHORITY TABLES

	Table Name	Contents
1	NGMA.AGSOCOUNTRIES	Valid country codes
2	NGMA.AGSOSTATES	Valid codes of Australian states
3	STRATA.GEOPROVS	Valid geological provinces
4	NGMA.HMAPS	Australian 1:100 000 map names and four digit codes
5	NGMA.QMAPS	Australian 1:250 000 map names and six character codes
6	GEODX.AGSOREFS	References in AGSO's bibliographic database
7	GEODX.AGSOAUTHS	Authors of references in the bibliographic database
8	NGMA.LOCMETHODS	Methods used for locating field sites
9	NGMA.ORIGINATORS	Originators and collectors of the samples
10	RTMAP.LANDF	Landform types
11	RTMAP.VEGET	Vegetation types
12	STRATA.GEOTIME	Geological time terms
13	NGMA.ROCKTYPES	17 broad lithology categories
15	NGMA.LITHOLOGIES	Rock names and qualifiers
15	NGMA.LITHDATATYPES	Lithological data descriptors
16	NGMA.STRUCTYPES	Structural data types
17	STRATA.STRATRELS	Stratigraphic relationships
18	NGMA.GEOREGIONS	Geological regions
19	NGMA.AGSOMINERALS	Minerals
20	GEODX.STRATSTATUS	Status of stratigraphic units
21	NGMA.SOURCES	Laboratory or organisation which analysed the sample
22	OZCHRON.METHODS	Analytical methods used in deriving the analyses
23	GEODX.STRATRANK	Ranks of stratigraphic units
24	NGMA.CONTACTS	Geological contact types
25	NGMA.IZ_RECTYPES	List of record types for the INTERIZONS table
26	NGMA.SECTYPES	Type of measured section
27	STRATA.PROVRANKS	Ranks of geological provinces
27	STRATA.TIMESCOPE	The geographical scope of a geological time range
29	STRATA.TIMERANK	Ranking terms for the geological time ranges
30	STRATA.TIMESTATUS	Status of geological time range
31	NGMA.LITHUNITS	Map symbols for regions with no formal stratigraphy
32	OZCHRON.MEAN_METHOD	Methods used to calculate the mean for SHRIMP age determinations
33	OZCHRON.COMMON_PB	Lead isotopes used for correcting for common lead
34	OZCHRON.AGE_USED	Isotope ratios used for SHRIMP age determinations

Table 1.2: List of authority tables in OZCHRON and OZROX.

DATABASE VIEWS

	View Name	Underlying Tables
1	ROCKDATATYPES	LITHDATATYPES and AGSOMINERALS
2	LITHNAMES	LITHOLOGIES and AGSOMINERALS
3	STRATLEX	Current stratigraphic names from the Australian Register of Stratigraphic Names

Table 1.2: List of database views and their underlying tables.

Descriptions of the Main Tables used in OZCHRON

Section 2—Descriptions of the main tables used in OZCHRON

2.1 – THE SITES TABLE

The **SITES** table standardises the recording of geographic point location data in AGSO's corporate databases. The table is mainly for surface location data for field geological, geochemical, drill hole collars and geophysical observations. For example, an entry in the **SITES** table may record location data for observations at an outcrop, sample(s) data, a gravity reading, or all three. Geographic coordinates are recorded as decimal latitudes and longitudes, and AMG eastings and northings. Information is also recorded on how the location was obtained and its accuracy.

The primary key for the **SITES** table is a combination of the ORIGNO and SITEID fields.

Description of columns

ORIGNO: Mandatory integer of up to 5 digits. The originator is represented by this number and their full name is stored in the related **ORIGINATORS** table. The originator is usually the person or organisation that collected the data at the site, and is also an indication of where to go for more information.

SITEID: Mandatory field of up to 16 characters for a user-supplied number or ID for the site. Any combination of numbers and letters is used, but the SITEID must be unique to the originator. There may be more than one sample collected from each site but only one site record is recorded in the **SITES** table. The multiple sample descriptions for each site are stored as multiple records in the **ROCKS** table each identified by a unique SAMPLEID.

FIELDID: An optional field of up to 16 characters for an alternative site number or ID. The FIELDID is not necessarily unique.

OBSDATE: The date the field site was visited or observed - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

OBSTIME: The time the field site was observed - in ORACLE's 24-hour format of HH:MM - e.g. '14:47'.

COUNTRYID: Mandatory 3 capital characters indicating the country. Valid codes are stored in the **AGSOCOUNTRIES** authority table.

STATE: A field of up to 3 capital characters indicating the State. Mandatory if the country is Australia. Valid codes are stored in the **AGSOSTATES** authority table.

REGNO: An integer field of up to 5 digits indicating the geological region. Mandatory if the country is Australia. Valid entries are stored in the **GEOREGIONS** authority table. Geological regions are based on Palfreyman's Geological provinces (see Palfreyman, 1984). The Geological region is similar to the geological province however it only represents the two-dimensional geographical region in which the sample was collected. Geological regions therefore cater for situations that can occur with drill holes which are, for

example, collared in the Cainozoic Karumba Basin and extend into an underlying Proterozoic basement. The sample site is in the Karumba Basin while the samples belonging to that site may be from the Karumba Basin or the Proterozoic basement.

GEOGAREA: An optional descriptive field of 64 characters for the name of the geographic area (valley, plain, mountain range) from which the sample comes e.g., Newcastle Ranges, Tuggeranong Valley.

LOCDESC: An optional descriptive field of 64 characters for additional information relating to the site's location - e.g., '5 km SE of Brown's Bore'.

HMAPNO: A 4-digit integer identifying the 1:100 000 map sheet-area on which the site falls. The name of the map sheet is stored in the **HMAPS** authority table.

QMAPID: The 6-character ID of the 1:250 000 map sheet-area on which the site falls - e.g., 'SF5402'. The name is stored in the **QMAPS** authority table. The first four characters identify the 1:1 000 000 map, and the first two letters in the ID give the UTM zone.

EASTING: A 10-digit positive numeric field including 2 decimal places for the full AMG easting of the site in metres, (A coordinate entered to 2 decimal places achieves a precision of +/- 1.0 cm on the ground which is rarely achieved but allows precisely surveyed samples or drill collars to be recorded to their full surveyed precision).

NORTHING: A 9-digit positive numeric field including 2 decimal places for the full AMG northing of the site in metres. (A coordinate entered to 2 decimal places achieves a precision of +/- 1.0 cm on the ground which is rarely achieved but allows precisely surveyed samples or drill collars to be recorded to their full surveyed precision).

ACCURACY: A mandatory integer field of up to 5 digits for the absolute accuracy of the given coordinates in metres on the ground. Data transferred from the pre-1992 **SAMPLES** table, which stored locality information associated with earlier versions of the OZCHEM database, did not include accuracy estimates. The following assumptions were therefore made in translating these results to the **SITES** table.

1 - Unless otherwise known, it is assumed that all geographic coordinates were obtained from 1:100 000-scale maps, and were therefore accurate to about 100 metres.

2 - Results known to have been measured only from 1:250 000-scale maps are assumed accurate to 250 metres.

3 - Other approximately known localities have had their accuracies appropriately estimated at distances up to 10 km.

HEIGHT: An integer with up to 5 digits for the elevation of the site in metres above mean sea level. Can be negative.

HEIGHTACC: A positive integer of up to 3 digits for the absolute error in metres of the elevation entered in the previous field.

DLAT: A positive numeric field with up to 2 digits in front of the decimal point, and up to 6 digits after the decimal point.

NS: A single character field that can only take the values 'N', 'n', 'S' or 's' for northern hemisphere or southern hemisphere, respectively. The value in this field is automatically set to a capital 'S' when a latitude is entered. However if the latitude has been calculated from the AMG Northing then the default will be a lower case 's'.

DLONG: A positive numeric field with up to 3 digits in front of the decimal point and up to 6 digits after the decimal point.

EW: A single character field that can only take the values 'E', 'e', 'W' or 'w' for east or west, respectively. The value in this field is automatically set to a capital 'E' when a longitude is entered. However if the longitude has been calculated from the AMG Easting then the default will be a lower case 'e'.

METHOD: A mandatory integer of up to 3 digits pointing to a record in the **LOCMETHODS** authority table showing the method used to obtain the geographic coordinates of the site.

BIBREF: A 9-character field that identifies a reference in AGSOREFS, AGSO's Bibliographic References Database, which locates or refers to the site. The reference could be a locality diagram in a publication, a non-standard published map or a map from a PhD thesis or company report. This column is provided principally as a means of recording the lineage or provenance of data that have come from another source. Note that almost any map can be treated as a bibliographic reference using the standard 'Harvard-style' of reference notation. A future user of the **SITES** table can then refer to this map to do their own assessment of the accuracy of the geographic coordinates.

AIRPHOTO: An optional field of 36 characters to identify the airphoto on which the site is located and/or was plotted. The field is for the name of the airphoto series, the run number and the photo number - e.g. 'Cloncurry 8/2134'.

RELATED DATA SETS: Twelve single character fields that show what data sets join to the site. Only two values are allowed, null or capital 'X' - the 'X' being placed in all fields with related data sets. The field names are as follows:

OC	OUTCROPS table
ST	STRUCTURES table
RO	ROCKS table
PE	PETROGRAPHY database
RC	OZCHEM database
OZ	OZCHRON database
OM	OZMIN database
SC	STREAMCHEM database
RT	RTMAP database
RP	ROCKPROPS database
SP	SPECPROPS database
SH	SECTHOLES database
RS	ROCSTOR database

ENTRYDATE: The date the site description was entered - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: An 8-character field for the username of the person who entered the data. This column is used by AGSO's ORACLE system to identify the records to which a user has update privileges. Users are therefore only able to update the records which belong to them, or to which they have been granted explicit access.

DATUM: A mandatory 8-character field for the datum of the coordiantes used to locate the site. The value in this field may be set to "AGD66", "GDA94", or, as in the case of some of the very early **SITES** data, "Unknown". The default value is "AGD66". All sites in the current release have been converted to AGD66.

ENTERED_COORDS: A mandatory single character field used to identify whether the coordinates where originally entered as metric or as imperial latitudes and longitudes. This column is required because the **SITES** table stores both metric and geographical coordinates either of which can be derived from the other.

2.2 – THE OUTCROPS TABLE

The **OUTCROPS** table is designed for descriptions of the outcrop as a whole and for describing relationships between lithologies and structures in the outcrop. Information on individual lithologies, samples and structures belongs in the ROCKS and **STRUCTURES** tables - both of which have a many-to-one relationship with **OUTCROPS**. The **OUTCROPS** table has a one-to-one relationship with the **SITES** table, and uses the same primary key covering the originator (ORIGNO) and site (SITEID). The reason for the separation is that tables other than **OUTCROPS** need to link in with the location information in **SITES**.

Description of columns

ORIGNO: As for the **SITES** table.

SITEID: As for the **SITES** table.

ROCKRELS: An optional field of 128 characters for a description of the rock relations in the outcrop.

SKETCH: An optional field of 64 characters noting any sketches made at the outcrop.

PHOTO: An optional field of 64 characters noting any photos taken at the outcrop.

VEGCODE: An optional field of up to 5 characters for the vegetation type in AGSO's vegetation types authority table (**VEGET**). Vegetation classes in this are based on legend from AUSLIG's 1:5 000 000 Vegetation Map of Australia.

VEGETATION: An optional 64 character field for a text description of the vegetation at the site of the outcrop. Important for remote sensing database.

LANDCODE: An optional field of up to 4 characters for the landform in AGSO's landforms authority table (**LANDF**). Landform classes in the **LANDF** table are based on the `Australian Soil and Land Survey Handbook' by Gunn, R.H.,

Beattie, J.A., Reid, R.E., and van der Graff, R.H.M., 1988, Inkata Press, Melbourne.

LANDFORM: An optional 64 character field for a text description of the landform at the site of the outcrop.

ENTRYDATE: As for the **SITES** table.

ENTEREDBY: As for the **SITES** table.

2.3 – THE ROCKS TABLE

The **ROCKS** table has a many-to-one relationship with the **SITES** table, and also with the **OUTCROPS** table if an outcrop record exists for a site. This is a natural relationship as a number of different lithologies and samples commonly occur at the one site.

The primary key for the **ROCKS** table is ROCKNO.

Description of columns

ROCKNO: A system generated unique sequential number of up to 6 digits which links attributes in the **LITHDATA, STRUCTURES** and **INTERIZONS** tables to records in the **ROCKS** table.

ORIGNO: As for the **SITES** and **OUTCROPS** tables.

SITEID: As for the **SITES** and **OUTCROPS** tables except that the ORIGNO and SITEID, combined, are no longer a unique key. This is because there can be more than one record in the **ROCKS** table for a particular **SITES** record.

SAMPLEID: A mandatory field of up to 16 characters for the ID of a sample. The number must be unique to the originator, although it can be identical to the SITEID, if there is only one sample from a given site.

ROCKTYPE: A positive integer of up to 2 digits that identifies the basic rock type from the **ROCKTYPES** authority table. This field is designed to allow easy selection of all samples of a particular rock type (e.g., intrusive mafic rocks, clastic sediments, felsic gneisses).

QUALIFIER: A 20-character optional field for a qualifying term, if any, before the lithology name field that follows. Up to three qualifiers, one in each qualifier field, are allowed for each lithology name. The qualifying term must be in the **LITHNAMES** view, which is a view on the **LITHOLOGIES** authority table and the common minerals from the **AGSOMINERALS** authority table. Qualifiers in the **LITHNAMES** view are classified as Type 'Q' for qualifier. An example of a qualifier is 'pelitic', as in 'pelitic schist'.

QUALIFIER2: A 20-character optional field for a second qualifying term for the lithology name. A qualifier can only be entered into this column after a first qualifier has been entered into the qualifier column above.

QUALIFIER3: A 20-character optional field for a third qualifying term for the lithology name. A qualifier can only be entered into this column after first and second qualifiers have been entered into the QUALIFIER and QUALIFIER2

columns above. The correct representation of the qualifier columns to LITHNAME is always: QUALIFIER3, QUALIFIER2, QUALIFIER, LITHNAME. Table 2.1 below shows the relationship between the 3 qualifier columns and the LITHNAME column, and the order in which they should always be represented.

QUALIFIER3	QUALIFIER2	QUALIFIER	LITHNAME
		micaceous	sandstone
			tonalite
foliated	plagioclase	hornblende	tonalite
	coarse	hornblende	granodiorite
coarse	foliated	plagioclase	granodiorite
coarse	pyroxene	plagioclase	gabbro
		foliated	granite

Table 2.1: This table shows the relationship between the three qualifier columns and the LITHNAME column, and the order in which they should always be represented. A value cannot be entered into the QUALIFIER2 column until a value has been entered into the QUALIFIER column. Likewise a value cannot be entered into QUALIFIER3 column unless there are values in the QUALIFIER2 and QUALIFIER columns.

LITHNAME: A 32-character field for a lithology name. Only names already in the **LITHOLOGIES** authority table and classified as Type 'I', 'M', 'S' or 'H' (igneous, metamorphic, sedimentary, hybrid) may be entered into the LITHNAME field. The hybrid classification has been introduced to cater for non-specific lithology names, e.g. breccia, which can be sedimentary, volcanic or tectonic. Hybrid names must always be preceded by a qualifier.

GROUPING: A 50-character optional field for a user-defined classification. This field is used to classify suites of rocks from particular regions into classes other than those suggested by other fields on the form. The values entered here are chosen by the Originator and have no global significance.

STRATNO: A positive integer of up to 5 digits that automatically identifies the formal stratigraphic name, and age from the **STRATLEX** authority view of current stratigraphic names from the Australian Register of Stratigraphic Names.

INFORMAL: Optional free-text field of 64 characters for an informal stratigraphic name, which is not in AGSO's **STRATLEX** authority view. Due to ongoing updating of the Australian Register of Stratigraphic Names some of the names currently entered in the informal field may now be current formal names in **STRATLEX**. From time to time AGSO runs checks on the informal field to identify names which should be in the STRATNO field. Purchasers of OZCHEM can view the current status of stratigraphic names online via the AGSO home page on the world wide web. This page also displays the history of the name showing all previous and superseded names and terms. The web address for the AGSO home page is: **http://www.agso.gov.au/**

AGE: Optional free-text field of 54 characters for the geological age (e.g., Proterozoic, Archaean). Only age terms in the **GEOTIME** authority table may be entered.

DESCRIPTION: A 64-character optional free-text field for a description of the lithology. If a lithology is sufficiently characterised by the previous fields, then this field can be used for additional descriptive information relating to the lithology.

OTHERINFO: A 64-character optional free-text field that may be used for any data not covered by the above fields that the user feels are relevant.

GEOLPROVNO: An integer of up to 3 digits for the geological province, subprovince or domain in which the sample occurs. Valid codes must be in the **GEOPROVS** authority table. Samples can be recorded as belonging to one of a domain, subprovince or province. The province hierarchy is included in the **GEOPROVS** table so that all samples belonging to a particular province can be retrieved regardless of whether they have been saved as a province, a subprovince, or a domain. For ORACLE users the following statement will retrieve a list of all subprovinces and their domains that belong to the *Mount Isa Inlier*. These can then be used to retrieve the required records from the database -

select provno from geoprovs
connect by prior provno = parent start with provno = 54

MAPSYMBOL: An 8-character optional field for recording recognised map symbols for lithological units. Only symbols already in the **LITHUNITS** authority table can be entered. This field is primarily for identifying units in Archaean terranes where little or no formal stratigraphy has been defined (the Yilgarn is the only province with symbols in this table so far). Map symbols are unique for each province. The development of province-wide stratigraphy with matching geological units having the same symbol between sheets facilitates the easy integration of the data within a GIS.

MODEOCC: A 4-character field for recording the mode of occurrence of the sample (xenolith, dyke, sill, pipe). Valid occurrence modes are described in the **LITHDATATYPES** authority table having the Data Type 'IOM' for igneous occurrence mode or 'SOM' for sedimentary occurrence mode.

SECTHOLENO: An optional integer of up to 5 digits. The SECTHOLENO is used to link records in the **ROCKS** table with drill hole or measured section records in the **SECTHOLES** table. The SECTHOLENO can only be entered if there is a matching record in **SECTHOLES**.

ENTRYDATE: As for the **SITES** and **OUTCROPS** tables.

ENTEREDBY: As for the **SITES** and **OUTCROPS** tables.

LASTUPDATE: As for the **SITES** and **OUTCROPS** tables.

2.4 – THE LITHDATA TABLE

The **LITHDATA** table, which has a many-to-one relationship with the **ROCKS** table, provides an extendable attribute system for the **ROCKS** table. All entries in

LITHDATA are controlled by the **ROCKDATATYPES** database view which is a view covering the **LITHDATATYPES** table and the **AGSOMINERALS** table.

Description of columns

ROCKNO: A 6-digit integer which links attribute records in the **LITHDATA** table to records in the **ROCKS** table.

DATATYPE: A mandatory field of up to 4 capital letters for an abbreviation pointing to a data type (attribute name) in the **ROCKDATATYPES** view. Only data types already in the **ROCKDATATYPES** view may be entered, but the same DATATYPE may be inserted more than once (e.g., a sample may exhibit two types of alteration - sericitic and potassic in a porphyry system).

SUBTYPE: A mandatory field of up to 4 capital letters for an abbreviation pointing to a subtype (value of an attribute) of a DATATYPE in the **ROCKDATATYPES** view. Table 2.2 is a listing of subtype values for the *alteration* DATATYPE.

DATATYPE		SUBTYPE	
ALT	Alteration	PR	propylitic
ALT	Alteration	PO	potassic
ALT	Alteration	KA	kaolinitic
ALT	Alteration	AR	argillic
ALT	Alteration	SE	sericitic
ALT	Alteration	SI	silicified
ALT	Alteration	ZE	zeolitic
ALT	Alteration	GR	greisen
ALT	Alteration	PY	pyritic
ALT	Alteration	SK	skarn
ALT	Alteration	EP	epidotised
ALT	Alteration	CL	chloritic
ALT	Alteration	CA	carbonate
ALT	Alteration	SP	serpentinised
ALT	Alteration	AB	albitic
ALT	Alteration	HM	hematitic
ALT	Alteration	AL	alunitic

Table 2.2: An example of a DATATYPE and its SUBTYPES.

DESCRIPTION: An optional field of 128 characters for any additional descriptive information relating to the DATATYPE/SUBTYPE record.

ENTRYDATE: As for the **SITES, OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES, OUTCROPS** and **ROCKS** tables.

LASTUPDATE: As for the **SITES** and **OUTCROPS** and **ROCKS** tables.

2.5 THE SECTHOLES TABLE

The **SECTHOLES** table has a many-to-one relationship with the **SITES** table and is for 'header' information for each drill hole or measured stratigraphic section. It records the

ID, section type, initial azimuth, initial inclination, total section length, the relationship of the section or drill hole to bedding and if the section is up or down sequence.

The primary key for the **SECTHOLES** table is SECTHOLENO.

Description of columns

SECTHOLENO: A unique sequential integer of up to 5 digits which links **SECTHOLE** records with matching records in the **INTERIZONS** and **ROCKS** tables.

ORIGNO: As for the **SITES, OUTCROPS** and **ROCKS** tables.

SITEID: As for the **SITES, OUTCROPS** and **ROCKS** tables.

SECTYPE: A single-character field which indicates the type of measured section being described (ie, surface measured section or type of drillhole). Valid choices come from the **SECTYPES** authority table

TYPESEC: A mandatory single-character field which indicates if the section is a type section "T", reference section "R" or other "O".

PEDIN_UNO: An optional 8-character field. This provides a link to well descriptions in the PEDIN database (National Petroleum Exploration Data Index).

DH_COMPANY: An optional free-text field of up to 48 characters for the name of the company or organisation which drilled the hole.

DH_ID: An optional free-text field of up to 48 characters for the name of the drill hole.

AV_AZIMUTH: An optional three-digit field for the average azimuth of a non-vertical, essentially straight measured section or drill hole in degrees east of true north.

AV_INCLIN: An optional up to two-digit field for the average inclination of a essentially straight measured section or the drill hole in degrees. Positive if above the horizontal, negative if below.

TOT_METRES: An optional six-digit field for the total down hole depth of the drill hole in metres. Up to two digits are allowed after the decimal place, allowing depths to the nearest centimetre.

BEDPERP: A mandatory single-character field for either a 'Y' or an 'N', for yes or no, indicating if the drill hole or measured section is perpendicular to bedding. If the drill hole or measured section is perpendicular to bedding then intervals given in INTERIZONS table can be regarded as true thicknesses.

REFID: A 9-character field that identifies a reference in AGSOREFS, AGSO's Bibliographic References Database, which refers to the drill hole or measured section.

UPORDOWN: A mandatory single-character field for either 'U', 'D' or '?', to indicate if the drill hole or measured section is up or down sequence or not known.

ENTRYDATE: As for the **SITES, OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES, OUTCROPS** and **ROCKS** tables.

LASTUPDATE: As for the **SITES** and **OUTCROPS** and **ROCKS** tables.

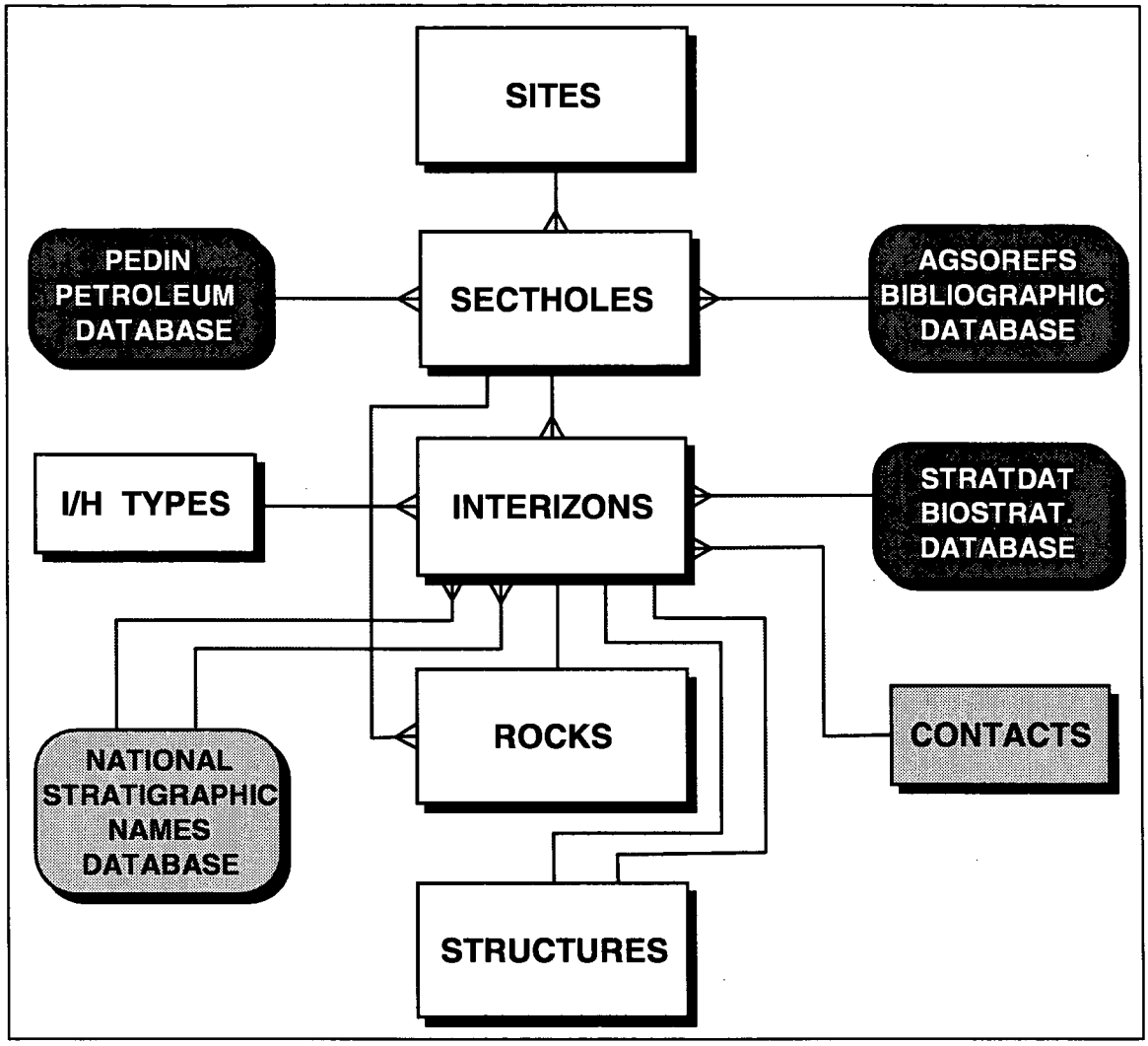


Figure 2.1 A schematic diagram of the table and data relationships for recording measured sections and drill holes. "Crows" feet indicate the many end of many-to-one links.

2.6 THE INTERIZONS TABLE

The **INTERIZONS** table has a many-to-one relationship with the **SECTHOLES** table. For any one drill hole or measured section many intervals may be described, and for any one interval several types of information may be recorded. The **INTERIZONS** table records only the lengths of described intervals and the type of data being described. Pointers in the table point to full descriptions which are stored in the **ROCKS** and **STRUCTURES** tables, and the **STRATLEX** view. The **CONTACTS** and some STRATDAT authority tables are also pointed to by the **INTERIZONS** table. The relationships of associated tables is shown in figure 2.1.

The primary key for **INTERIZONS** is the interizons number, IZ_NO.

Description of columns

IZ_NO: A unique sequential integer of up to 6 digits.

SECTHOLENO: An integer of up to five digits which links records in the **INTERIZONS** table with their parent record in the **SECTHOLES** and **ROCKS** tables.

RECTYPE: A mandatory field of up to three characters which indicates the type of information recorded (record type) for each interval. For any interval several types of information could be described, e.g. lithology, structure or stratigraphy, so that for any one interval there may be one or more records. The data for each record type are stored in the table that relates to that data type, and the record type is the pointer to the table which stores that particular record. Lithological data - record type "LTH" - are stored in the **ROCKS** table, and structural data - record type "STR" - are stored in the **STRUCTURES** table. Vector information for a measured section traverse or a drill hole - record type "SVY" - are stored in the **STRUCTURES** table. Rock unit boundary indicates either the overlying or underlying stratigraphic unit, details of which are stored in the **STRATLEX** authority view. STRATDAT geochronographic datum information is stored in the STRATDAT authority tables **STD_DATM_AGE**, **STD_DATM_NAME** and **STD_TYPE**.

D1: A mandatory number field of up to 6 digits for the commencing distance or depth of the described interval in metres. Up to 2 digits are allowed after the decimal place.

D2: An optional number field of up to 6 digits for the terminating distance or depth of the described interval in metres. Up to 2 digits are allowed after the decimal place.

PERCENT: An optional number field of up to 7 digits. Up to 2 digits are allowed after the decimal place. This field is used to record the percentage occurrence of a particular lithology within an interval. It is mandatory if the RECTYPE is 'LTH'.

DETAIL_PTR: An optional number field of up to 7 digits which holds a value which is a pointer to a record in another table. Only 1 record per record type is stored in this field and can be a value for any of the following record types - contact type, overlying stratigraphic unit number, ROCKNO, or STRUCNO. The code for the geological contact type points to the full name in the **CONTACTS** authority table, the name and defining details of the overlying stratigraphic unit is in the **STRATLEX** authority view, the lithological description is in the **ROCKS** table, and structural and survey information is in the **STRUCTURES** table. Table 2.3 shows the record types and the corresponding data types and the tables which hold the information.

DETAIL_PTR_CHR: An optional field of up to 7 characters which holds a value which is a pointer to a record in another table. Only 1 record per record type is stored in this field. The record could be a value for either the overlying stratigraphic unit or STRATDAT datum code. As for the overlying stratigraphic unit in the field **DETAIL_PTR**, the name and defining details of the underlying stratigraphic unit are in the STRATLEX authority view. The

STRATDAT datum code indicates a STRATDAT datum name defined in the STRATDAT tables **STD_DATM_NAME** and **STD_DATM_AGE**.

DETAIL_PTR_CHR2: An optional field of up to 7 characters which holds several values separated by a colon which are pointers to records in the STRATDAT table **STD_TYPE**. The **STD_TYPE** table is for the type of geostratigraphic datum.

COMMENTS: A 128-character optional free-text field for any additional comments regarding the interval.

ENTRYDATE: As for the **SITES, OUTCROPS, ROCKS** and **SECTHOLES** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

LASTUPDATE: As for the **SITES** and **OUTCROPS** and **ROCKS** tables.

RECTYPE	RUB	LTH	STR	SVY	CON	STD
POINTS TO TABLE	Stratlex	Rocks	Structures	Structures	Contacts	Stratdat
DETAIL_PTR	stratno (overunit)	rockno	structno	structno	contactid	
DETAIL_PTR_CHR	stratno (underunit)					datum name
DETAIL_PTR_CHR2						datum type

Table 2.3 : The relationship of the detail pointer fields (DETAIL_PTR, DETAIL_PTR_CHR and DETAIL_PTR_CHR2) in the INTERIZONS table with the tables that hold the data for each interval description. The table that each record type (RECTYPE) refers to is shown in the second row. For each of the Record Types the values in the Detail Pointer fields will correspond to the primary key fields for the table shown in the second row.

2.7 THE STRUCTURES TABLE

The **STRUCTURES** table contains structural measurements for lithological descriptions in the **ROCKS** table or the **INTERIZONS** table.

The primary key for **STRUCTURES** is STRUCNO.

Description of columns

ORIGNO: As for the **SITES, OUTCROPS** and **ROCKS** tables.

SITEID: As for the **SITES, OUTCROPS** and **ROCKS** tables.

STRUCNO: A system generated unique 6-digit integer. This field links structural measurements with parent records in the **INTERIZONS** table.

ROCKNO: A 6-digit integer. This is a foreign key which links structural measurements to parent lithology descriptions in the **ROCKS** table.

TYPE: A mandatory 2-digit integer pointing to a structural type in the **STRUCTYPES** authority table.

SUBTYPE: An optional 2-digit integer pointing to a structure subtype in the **STRUCTYPES** authority table.

AZIMUTH: A 3-digit integer for the azimuth of the structural observation in degrees between 0° and 360°. For planar observations the azimuth always the direction of dip. The azimuth of horizontal planar structures is always zero.

INCLINATION: A 2-digit integer - between 0° and 90° - for the vertical inclination of the structural vector below the horizontal.

DEFNO: A single-digit integer for the number of the deformation that produced the structure being measured.

DEFSURFNO: A single-digit integer for the deformation that produced the deformed surface being measured.

PLOTRANK: A 3-digit integer indicating the order of importance in plotting the structure on a map. Where a number of structures have been measured at the one locality, plot rank determines which structures will be plotted first.

ENTRYDATE: As for the **SITES**, **OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES**, **OUTCROPS** and **ROCKS** tables.

LASTUPDATE: As for the **SITES** and **OUTCROPS** and **ROCKS** tables.

2.8. THE RB-SR TABLES

The Rb-Sr tables embody the standard isochron method of Rb-Sr dating. Analysed samples may be from crushed whole rocks or mineral separates. Analytical results yield a pair of isotope ratios which can be plotted on the coordinates $^{87}Sr/^{86}Sr$ versus $^{87}Rb/^{86}Sr$. A suite of geologically related whole rock samples should form a straight line, with the slope indicating the time since the rock system cooled beneath the strontium migration temperature and the $^{87}Sr/^{86}Sr$ axis intercept giving the isotopic composition of the Sr (initial $^{87}Sr/^{86}Sr$ ratio) at that time. Data from a combination of a whole rock and its constituent minerals may provide data about the timing of a subsequent metamorphic event.

The Rb-Sr data are stored in two tables. The **RB_SR** table records analytical data on individual samples or separates. The **RBSR_AGES** table is for the 'pooled' age information derived from combined analytical results. The common keys for linking the two tables are the record number (RECNO) in **RBSR_AGES** and age pointer (AGE_POINTER) in **RB_SR**.

2.8.1. RB_SR TABLE

The primary key for **RB_SR** is ANALNO.

Description of columns

AGE_POINTER: A mandatory number field of up to 8 digits with 2 decimal placesPoints to the record number (RECNO) of a 'pooled result' in the **RBSR_AGES** table.

ANALNO: A system generated unique 6 digit integer which determines the ordering of records in the table.

ORDERNO: Optional 2 digit number for establishing the ordering of analytical results associated with a particular record number in the **RBSR_AGES** table.

ORIGNO: When combined with the sample number, forms a unique key to point to stratigraphic information in the **ROCKS** table. As for **SITES, OUTCROPS** and **ROCKS**.

SITEID: Mandatory character field of up to 16 characters. When combined with the originator number, forms a unique key to point to the location information in the **SITES** and **OUTCROPS** tables. Having the SITEID in this table obviates the need to join first with the **ROCKS** table to acquire the SITEID before location information can be obtained from **SITES**. As for **SITES, OUTCROPS** and **ROCKS**.

SAMPLEID: Mandatory character field of up to 16 characters. When combined with the originator number forms a unique key to point to stratigraphic information in the **ROCKS** table.

REFID: Mandatory pointer to an existing reference in the **AGSOREFS** table.

METHODNO: Optional pointer to a description of the analytical method in the **METHODS** table.

MINERAL: Optional field of up to 16 characters for indicating the material analysed - 'whole rock' or the name of the separated mineral.

RB_PPM: Mass abundance of rubidium in parts per million.

SR_PPM: Mass abundance of strontium in parts per million.

RB87SR86: Calculated isotope ratio $^{87}Rb/^{86}Sr$.

SR87SR86: Observed isotope ratio $^{87}Sr/^{86}Sr$.

COMMENTS: Optional 240-character field for any additional information.

RELEASED: The date the data were first released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the **SITES, OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES, OUTCROPS** and **ROCKS** tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.8.2 RBSR_AGES TABLE

The primary key for the **RBSR_AGES** table is RECNO.

Description of columns

RECNO: System supplied number. Links this table with analytical results in the **RB_SR** table.

AGE: The Rb-Sr isochron or model age expressed in Ma.

STD_DEVA: Error in age at the 95% confidence level in Ma

INIT_RATIO: The isochron's intercept on the $^{87}Sr/^{86}Sr$ axis.

STD_DEVI: Error in intial $^{87}Sr/^{86}Sr$ at the 95% confidence level.

COMMENTS: Optional field of up to 240 characters for additional information and commentary on the geological significance of the results.

MSWD: Mean square of weighted deviates.

RELEASED: The date the data were released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the **SITES, OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the SITES, OUTCROPS and ROCKS tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.9. CONVENTIONAL U-PB DATA TABLES

There are two isotopic methods currently used which are based on the radioactive decay of uranium to lead: conventional and ion microprobe (or SHRIMP) analysis. The conventional method involves chemical pre-treatment of uranium-bearing minerals - commonly zircon - in amounts ranging from milligrams to a few grains, and reduction of the data using the 'Concordia' diagram, consisting of a Y-axis ($^{206}Pb^*/^{238}U$) and an X axis ($^{207}Pb^*^{235}U$). The asterisk in these relationships denotes the radiogenic component generated over the lifetime of the host mineral, a quantity obtained by subtracting the common Pb in proportion to the observed ^{204}Pb abundance. Conventionally, this contaminant is isotopically likened to the average Pb in the country rock, or the ratios prescribed by the Pb growth curve most favoured by the author for Pb of the appropriate age.

A further complication is possible contamination in the laboratory during processing. Since there is an inevitable uncertainty about the isotopic character of the common Pb, the corrected Concordia variables, and the consequent age estimates, are most reliable when the observed $^{206}Pb/^{204}Pb$ is large (~10,000).

The power of the Concordia treatment lies in the assumption that the present-day value of the ratio $^{238}U/^{235}U$ is a natural constant. This is true for most localities and for all of the analysed samples in the database. However, one case is known of a "natural reactor" at Oklo, Gabon, West Africa. Here a mid-Proterozoic uranium accumulation in an old river bed "went critical", and a significant proportion of its ^{235}U was consumed.

Assumed constancy in the U ratio leads to a single, time-dependent exponential curve ("Concordia") which is the locus of all samples which have neither lost nor gained U or Pb in the time since zircon crystal formation. Loss of Pb (or gain of U) yields a point

below Concordia. The converse, plotting above the curve, is less common. A suite of zircon fractions from the one sample, in which there is a range of Pb loss, defines a single line ("Discordia"), for which the upper intercept with Concordia corresponds with zero Pb loss and the age of crystal formation. Displacement along Discordia is related to the degree of loss.

There are several algorithms which describe such a line. The simplest permits a second, lower, intercept which may be related to the time of a second event associated with an "instantaneous" loss of the missing Pb. A chord joining the sample point with the origin intercepts Concordia at the minimum possible age estimate for the host sample. There is yet another possible complication, arising from the inheritance of Pb from an earlier source. This is discussed below under the SHRIMP data.

Conventional U-Pb data are stored in two tables. In the U-PB table, data from the individual minerals are stored, whilst in the UPB_AGES table, the results from the individual minerals are pooled. The U_PB table has a many-to-one relationship to the UPB_AGES table, as there are commonly a number of analyses that go to make up one pooled result stored in the UPB_AGES table.

2.9.1 U_PB TABLE

The primary key for **U_PB** is ANALNO.

Description of columns

RECNO: System supplied number, which is automatically generated. Points to the record number of a pooled result in the **UPB_AGES** table.

ANALNO: System-generated unique number.

ORIGNO: As for the **RB_SR** table.

SITEID: As for the **RB_SR** table.

SAMPLEID: As for the **RB_SR** table.

ORDERNO: Optional number for establishing the ordering of analytical results associated with a particular record number in the **UPB_AGES** table.

FRACTION: Optional 16-character field for the analysed fraction of a sample.

REFID: Mandatory pointer to an existing reference in the **AGSOREFS** table.

METHODNO: Optional pointer to a description of the analytical method in the **METHODS** table.

WEIGHT: Sample weight in milligrams.

U_PPM: Mass abundance of uranium in parts per million.

PB_PPM: Mass abundance of lead in parts per million.

PBRAD_PPM: Optional. Calculated mass abundance of radiogenic lead in parts per million - after correction for common lead.

PB206PB204: Optional. Measured $^{206}Pb/^{204}Pb$ ratio. An indicator of the amount of common lead contamination.

PB206RAD: Optional. Mass abundance of radiogenic ^{206}Pb in parts per million.

PB207RAD: Optional. Mass abundance of radiogenic ^{207}Pb in parts per million.

PB208RAD: Optional. Mass abundance of radiogenic ^{208}Pb in parts per million.

PB207PB206: Optional. Atomic ratio of radiogenic ^{207}Pb and ^{206}Pb.

PB206U238: Optional. Atomic ratio of radiogenic ^{206}Pb and ^{238}U - ordinate of Concordia diagram.

PB207U235: Optional. Atomic ratio of radiogenic ^{207}Pb and ^{235}U - abscissa of Concordia diagram.

MIN76_AGE: Optional. Minimum Pb-Pb age in Ma derived from the slope of the chord from origin to sample point. This age is also given by the intercept of this chord on Concordia.

STD_DEV1: Optional. The 67% error limits in the minimum age estimated in Ma.

APP206_238: Age in Ma derived from the ratio $^{206}Pb^*/\ ^{238}U$.

STD_DEV2: Optional. The 67% error limits in the $^{206}Pb^*/^{238}U$ age in Ma.

APP207_235: Age in Ma derived from the ratio $^{207}Pb^*/\ ^{235}U$.

STD_DEV3: Optional. The 67% error limits in the $^{207}Pb^*/^{235}U$ age in Ma.

APP208_232: Optional. Age in Ma calculated from the ratio $^{208}Pb^*/\ ^{232}Th$.

STD_DEV4: Optional. The 67% error limits in the $^{208}Pb^*/^{232}Th$ age in Ma.

COMMENTS: Optional field of up to 240 characters for additional information.

RELEASED: The date the data were first released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the SITES, OUTCROPS and ROCKS tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the SITES, OUTCROPS and ROCKS tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.9.2. UPB_AGES TABLE

The primary key for the **UPB_AGES** table is RECNO.

Description of columns

RECNO:. Links this table with analytical results in the **U_PB** table.

AGE: Pooled age expressed in Ma. Commonly deduced from the upper intercept of the Discordia line with Concordia.

STD_DEVA: Optional 95% confidence level error in Ma.

LI_AGE: Age in Ma indicating the time of Pb-loss allowed for in the simplest model, i.e., the lower intercept of the Discordia line with Concordia.

STD_DEVI: Optional 95% confidence level error in Ma.

MSWD: Mean square of weights deviates

COMMENTS: Optional field of up to 240 characters for additional information or a commentary on the geological significance of the age result.

RELEASED: The date the data were released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the SITES, OUTCROPS and ROCKS tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the SITES, OUTCROPS and ROCKS tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.10 THE U-PB 'SHRIMP' DATA TABLES

These tables are used for U-Pb data obtained from the Sensitive High-Resolution Ion MicroProbe (SHRIMP). The calculations are similar to those described above under the conventional U-Pb Minerals Form. The difference is that polished sections of individual zircon grains are analysed. A primary beam of oxygen ions is focussed to a spot about 30 microns in diameter, and multiple analyses of a single zircon grain are possible. Distinctions can be drawn between older cores of mineral grains and later material forming the rims.

The **SHRIMP** table has a many-to-one relationship to the **SHRIMP_AGES** table, a rock sample is usually associated with multiple spot analyses.

2.10.1. SHRIMP TABLE

The primary key for **SHRIMP** table is ANALNO.

Description of columns

ANALNO: System-generated unique number.

RECNO: System-supplied number, which is automatically generated by the **SHRIMP_AGES** table. Links this table with analytical results in the **SHRIMP_AGES** table.

LABNO: Optional 16-character field for laboratory identification, as distinct from field sample numbering.

GRAINO: Optional 16-character field for identifying a particular mineral grain on the sample mounting.

SPOTNO: Optional 16-character field for identifying a spot analysis amongst several on a single mineral grain.

ORDERNO: Optional number for establishing the ordering of analytical results associated with a particular **SHRIMP_AGES** record number, usually in the time sequence in which they were analysed.

REFID: Mandatory pointer to an existing reference in the **AGSOREFS** table.

U_PPM: Mass abundance of uranium in parts per million.

TH_PPM: Mass abundance of thorium in parts per million.

TH_OVER_U: Calculated atomic ratio of thorium to uranium.

PB204_PPB: Calculated mass abundance of ^{204}Pb.

PB206PB204: Measured $^{206}Pb/^{204}Pb$ ratio.

F_PCT: Percentage of common ^{206}Pb in measured ^{206}Pb.

PB207PB206: Atomic ratio of radiogenic ^{207}Pb to ^{206}Pb after correction for common lead.

STD_DEV1: Optional. The 67% error limits in the $^{207}Pb^*/^{206}Pb^*$ ratio.

PB208PB206: Atomic ratio of radiogenic ^{208}Pb to ^{206}Pb after correction for common lead.

STD_DEV2: Optional. The 67% error limits in the $^{208}Pb^*/^{206}Pb^*$ ratio.

PB206U238RAD: Atomic ration of radiogenic $^{206}Pb^*$ to parent ^{238}U - ordinate of Concordia diagram.

STD_DEV3: Optional. The 67% error limits in the $^{206}Pb^*/^{238}U$ ratio.

PB207U235RAD: Atomic ratio of radiogenic $^{207}Pb^*$ to parent ^{235}U - abscissa of Concordia diagram.

STD_DEV4: Optional. The 67% error limits in the $^{207}Pb^*/^{235}U$ ratio.

PB208TH232RAD: Atomic ratio of radiogenic $^{208}Pb^*$ to parent ^{232}Th.

STD_DEV5: Optional. The 67% error limits in the $^{208}Pb^*/^{232}Th$ ratio.

MIN76_AGE: The $^{207}Pb^*/^{206}Pb^*$ age in Ma derived from the slope of the chord from origin to sample point. This age is also given by the intercept of this chord on Concordia.

STD_DEV6: Optional. The 67% error limits in the minimum age estimate in Ma.

AGE206_238: Age in Ma derived from the ratio $^{206}Pb^*/^{238}U$.

STD_DEV7: Optional. The 67% error limits of the $^{206}Pb^*/^{238}U$ in Ma.

AGE207_235: Age in Ma derived from the ratio $^{207}Pb^*/^{235}U$.

AGE208_232: Optional. Age in Ma calculated from the ratio $^{208}Pb^*/^{232}Th$.

COMMENTS: Optional field of up to 240 characters for additional information.

RELEASED: The date the data were released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the SITES, OUTCROPS and ROCKS tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the SITES, OUTCROPS and ROCKS tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.10.2. SHRIMP_AGES TABLE

The primary key for the **SHRIMP_AGES** table is RECNO.

Description of columns

RECNO: System-supplied number, which is automatically generated. Links this table with analytical results in the **SHRIMP** table.

ORIGNO: As for the **RB_SR** and **U_PB** table.

SITEID: As for the **RB_SR** and **U_PB** table.

SAMPLEID: As for the **RB_SR** and **U_PB** table.

AGE: Pooled age expressed in Ma. Commonly deduced from the upper intercept of the Discordia line with Concordia.

STA_DEVA: 95% confidence level error of the pooled age in Ma.

LI_AGE: Age in Ma indicating the time of Pb-loss allowed for in the simplest model, i.e., the lower intercept of the Discordia line with Concordia.

STD_DEVI: 95% confidence level error of the lower intercept age in Ma.

COMMENTS: Optional field of up to 240 characters for additional information, or a commentary on the geological significance of the age result.

RELEASED: The date the data were released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the **SITES**, **OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES**, **OUTCROPS** and **ROCKS** tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

METHOD: A single-integer field which points to values in the **MEAN_METHOD** authority table. This field records the method used to calculate the mean values for each analysis recorded in the **SHRIMP** table. For each analysis of a zircon grain the ratios of the isotopes are derived by calculating the mean of seven individual mass spectrometer measurements. The mean is calculated from either a linear data fit, a curved data fit or a combination of both.

COMMON_PB: A single integer field which points to values in the **COMMON_PB** authority table. This field records common lead isotope used for correcting for common lead.

AGE_USED: A single-integer field which points to values in the **AGE_USED** authority table. This field records which isotope ratio was used to give the pooled age.

2.11 THE SM-ND DATA TABLES

All data reported in this document were collected in the Research School of Earth Sciences, Australian National University (RSES, ANU) following standard analytical procedures (eg., McCulloch & Chappell, 1982; Nd isotopic characteristics of S- and I-type granites. Earth and Planetary Sciences Letters 58; Maas and McCulloch, 1991 The provenance of Archaean clastic sediments in the Narryer Gneiss Complex, Western Australia: trace element geochemistry, Nd isotopes and U-Pb ages from detrital zircons. Geochimica et Cosmchimica Acta, 27). Many samples were analysed through collaboration between AGSO staff and members of the RSES, ANU. Whole rock chemistry and isotopic age determination for many of these samples can be found in the AGSO OZCHEM and OZCHRON databases.

Compared to the Rb-Sr system, the Sm-Nd system has the advantage of being more robust to alteration and weathering. However, since Sm and Nd have very similar geochemical behaviour, they commonly show limited fractionation through magmatic generation and differentiation. Thus, under normal circumstances this method is not ideal for whole-rock isochron dating. A common practice of pooling data for samples with a range of Sm/Nd but not genetically related (e.g. basalts, komatiites and granites of a greenstone belt) often results in an unreliable isochron. In contrast, Sm-Nd mineral-whole rock isochrons are generally reliable, unless isotopic disequilibrium occurred during metamorphism.

The geological meaning of Nd isotope model ages is interpretative. Ion-probe zircon U-Pb dating of the same sample can greatly help to improve the interpretation.

Neodymium isotope data combined with geological and chemical information can be useful for ore genesis studies and as an exploration guide. For example, Ordovician shoshonites and calc-alkaline rocks in central western New South Wales have very distinctly high initial epsilon Nd (εNd) (commonly +7), whereas granites in the region have initial εNd values ranging from 0 to -10. Thus, Nd isotope analysis of tourmaline-bearing hydrothermal veins from this region is potentially useful for fingerprinting of Cu/Au mineralisation associated with the Ordovician shoshonites and calc-alkaline rocks.

A method analogous to the Rb-Sr isochron technique can be applied to the Nd-Sm system using a plot of $^{143}Nd/^{144}Nd$ versus $^{147}Sm/^{144}Nd$. Indeed, mineral ages can occasionally be obtained from a combination of whole rock samples and mineral separates. For this reason the arrangement of the Sm-Nd tables has been kept the same as the Rb-Sr tables. However, a linear regression through a suite of related whole rock samples is usually not practical because of insufficient spread in the Sm/Nd ratio. Furthermore, whole rock isochron ages obtained by pooling data for a group of

unrelated samples commonly are erroneous because of variation in initial $^{143}Nd/^{144}Nd$ values. In most cases each analysis must be treated separately, with model age calculated from assumptions about the protolith. Similar assumptions were required in the early days of dating by other radioactive decay systems. The assumed quantity is the 'initial ratio' - the isotopic composition of the daughter nuclide at the time diffusive losses ceased.

In the Sm-Nd system, the principle of model age calculations remains the same. The model age (T Nd) derives from the slope of the chord on the isochron diagram which connects sample point and reference point. In early publications the latter was chosen assuming that the original mantle (assumed protolith) was chemically similar to cosmic material represented by chrondritic meteorites (CHUR = **CH**rondritic **U**niform **R**eservoir). This is no longer considered adequate as the mantle is now known to be inhomogeneous and "depleted" as a result of crust formation. Since different depleted parameters are used by different authors for model age calculation, one needs to be cautious or consult an expert when the data are assessed. However, the time-adjusted initial epsilon Nd value (εNd) is still presented as a (parts per 10,000) difference from the CHUR value for $^{143}Nd/^{144}Nd$.

To calculate the depleted mantle model age (T_{DM}) for a sample we follow a common practice which assumes the mantle formed at 4.56 Ga (age of the earth) and there is a linear increase of initial εNd to +10 in the present day mantle ($^{143}Nd/^{144}Nd = 0.51316$ relative to a CHUR value of 0.51265). For Proterozoic rocks with $^{147}Sm/^{144}Nd = 0.11$ (common for felsic rocks) T_{DM} calculated this way is generally 200 Ma older than model ages calculated (following McCulloch, 1987 Sm-Nd isotopic constraints on the evolution of Precambrian crust in the Australian continent in Proterozoic lithospheric evolution. In: Proterozoic Lithospheric Evolution. American Geophysical Union 17), which assumes mantle depletion began at 2.7 Ga.

$$T_{DM}(\text{in Ma}) = \frac{1}{\lambda} \ln \left\{ \frac{[(^{143}Nd/^{144}Nd)_{sample} - (^{143}Nd/^{144}Nd)_{DM}]}{[(^{147}Sm/^{144}Nd)_{sample} - (^{147}Sm/^{144}Nd)_{DM}]} + 1 \right\}$$

where $\lambda = 6.54 * 10^{-12}\ yr^{-1}$; the decay constant of ^{147}Sm to ^{143}Nd
$(^{143}Nd/^{144}Nd)_{DM} = 0.51316$ and $(^{147}Sm/^{144}Nd)_{DM} = 0.2136$

In this database two-stage model ages (T_2) are reported for felsic rocks which have $^{147}Sm/^{144}Nd$ outside the commonly observed range of 0.09 to 0.13. The most recent stage of Nd isotope evolution is calculated with the measured $^{147}Sm/^{144}Nd$ to the geological age (T_1) of the sample.

A commonly observed $^{147}Sm/^{144}Nd = 0.11$ is assigned to earlier evolution (from the gological age to T_{DM}). This approach is quite successful for granites with high $^{147}Sm/^{144}Nd$ as a result of extensive crystal fractionation involving LRE enriched minerals.

The equation used for T_2 is as follows

$$T_2(Ma) = 10^3 * \left\{ \frac{-0.456\ \Sigma NdT_1 + 5.051 T_{1/1000} + 4.56}{6.051} \right\}$$

The calculated Nd model age represents the average crustal residence time of source material. The initial ΣNd (ΣNd_i) value at the geological age of the sample (Tg) can be the result of mixing material derived from different sources such as depleted mantle and older crust components (Figure 2.2)

There has been a change, in the normalisation of mass-spectrometer bias. Pre-1987 data in this document were collected on a single collector mass spectrometer (MSZ) at the Research School of Earth Sciences, ANU. To correct for mass fractionation during analysis Nd isotopic ratios were normalised to $^{146}Nd/^{142}Nd = 0.636151$ (e.g. McCulloch and Chappell, 1982). The conversion now adopted is use a normalisation value of $^{146}Nd/^{144}Nd = 0.7219$. A conversion factor of 1.001596, based on comparison of values for standards, has been applied to all $^{143}Nd/^{144}Nd$ data collected on the MSZ.

2.11.1 SMND_AGES TABLE

The primary key for the **SMND_AGES** table is RECNO.

Description of columns

RECNO: System supplied 6-digit integer.

MSWD: Optional. Mean square of weighted deviates.

AGE: Optional. The pooled isochron age (if applicable) expressed in Ma.

STD_DEVA: Optional. Age error envelope at the 95% confidence level.

INIT_RATIO: Optional: Extrapolated intercept on the isochron on the $^{143}Nd/^{144}Nd$ axis, or a calculated value based on the measured or estimated geological age.

STD_DEVI: Optional. The Initial Ratio error envelope at the 95% confidence level.

EPSILON: Initial ΣNd value at the assigned geological age -

$$\Sigma Nd = \left[\frac{(^{143}Nd/^{144}Nd)_{\text{sample at time of formation}}}{(^{143}Nd/^{144}Nd)_{\text{CHUR at same time}}} - 1\right] * 10^4$$

STD_DEV2: Optional. The epsilon error envelope at the 95% confidence level

COMMENTS: Optional 240-character field for additional information.

RELEASED: The date the data were first released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the **SITES, OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES, OUTCROPS** and **ROCKS** tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

2.11.2 SM_ND TABLE

The primary key for the **SM_ND** table is ANALNO.

Description of columns

AGE_POINTER: System-generated. Points to the record number of a 'pooled result' in the **SMND_AGES** table.

ANALNO: System-generated unique number. Determines the ordering of records in the table.

ORDERNO: Optional number for establishing the ordering of analytical results associated with a particular record number in the **SMND_AGES** table.

ORIGNO: When combined with the sample number, forms a unique key to point to stratigraphic information in the **ROCKS** table. When combined with SAMPLEID in **ROCKS**, the SITEID can be identified and location and outcrop information can be obtained from the **SITES** and **OUTCROPS** table, respectively.

SITEID: As for the **RB_SR**, **U_PB** and **SHRIMP_AGES** tables.

SAMPLEID: As for the **RB_SR**, **U_PB** and **SHRIMP_AGES** tables.

GEOL_AGE: Age of the sample (eg. emplacement or metamorphism) used for initial εNd calculation. It is mainly determined by isotope dating methods such as zircon U-Pb, and Rb-Sr isochrons. For some samples it is inferred from geological information.

EPSN_ND: Initial εNd value at the assigned geological age.

REFID: Mandatory pointer to an existing reference in the **AGSOREFS** table.

METHODNO: Optional pointer to a description of the analytical method in the **METHODS** table.

MINERAL: Optional field of up to 16 characters for indicating the material analysed - 'whole rock' or the name of the separated mineral.

SM_PPM: Optional. Mass abundance of samarium in parts per million.

ND_PPM: Optional. Mass abundance of neodymium in parts per million.

SM147ND144: Optional. The isotope ratio $^{147}Nd/^{144}Nd$.

ND143ND144: Optional. The isotope ratio $^{143}Nd/^{144}Nd$.

TND: The depleted mantle (DM) model age in Ma.

COMMENTS: Optional 240-character field for any additional information.

RELEASED: The date the data were first released for sale - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTRYDATE: As for the **SITES**, **OUTCROPS** and **ROCKS** tables - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

ENTEREDBY: As for the **SITES**, **OUTCROPS** and **ROCKS** tables.

LASTUPDATE: The date of the last update - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

SIGMA2X10_6: Uncertainty of measured $^{143}Nd/^{144}Nd$ value at the 95% confidence level.

RESTRICTED: A single-character field which may contain either 'U' or 'R' for unrestricted or restricted, respectively.

Description of the Authority Tables

Section 3—Description of the Authority Tables

The authority tables used by OZROX and OZCHRON are listed in alphabetical order. Listings of the entries in the more commonly used authority tables are also given.

3.1 AGE_USED AUTHORITY TABLE

The **AGE_USED** authority table lists the isotope ratios that are used for SHRIMP age determinations. The geochronologist selects the isotope ratio which he considers gives the most precise age.

Description of Columns

AGE_CODE: System generated sequence.

AGE_USED: Isotopic ratio used to determine the weighted mean age.

AGE_CODE	AGE_USED
1	6/38
2	7/6
3	208/232
4	207/235

3.2 AGSOAUTHS AUTHORITY TABLE

The **AGSOAUTHS** authority table is for the names of authors of references. Each record is one author and is linked to its reference in the **AGSOREFS** table by the REFID.

Description of columns

REFID: Mandatory field of up to 9 characters. A system generated sequence which joins **AGSOAUTHS** to **AGSOREFS**.

AUTHORS: A mandatory field of 60 characters. The name of the author of the reference with the surname first in lower case except for the first letter, followed by a space, a comma and the initials with full stops - for example, "Chowmondlier, K.L".

SEQUENCE: A mandatory integer of up to 2 digits indicating the order of the author in the reference list.

ENTEREDBY: As for the **SITES**, **OUTCROPS** and **ROCKS** tables.

ENTRYDATE: The date the record was entered - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

3.2 AGSOCOUNTRIES AUTHORITY TABLE

With a few minor additions, the countries and abbreviations used in this table are taken from Australian Standard 2632-1983 (Standards Association of Australia, 1983). Below is a listing of some of the entries in the **AGSOCOUNTRIES** authority table.

COUNTRYID	COUNTRYNAME
ATA	Antarctica
AUS	Australia
INA	Indonesia
INT	International Waters
NZL	New Zealand
PNG	Papua New Guinea
SLB	Solomon Islands

3.3 AGSOREFS AUTHORITY TABLE

The **AGSOREFS** authority table stores bibliographic references on either the source of the original data or some further information. This table is shared by all AGSO databases.

Description of columns

REFID: Mandatory field of up to 9 characters.A system generated sequence

OTHERID: Optional field of up to 16 characters. Any identifying sequence that the user may care to apply.

ENTEREDBY: The group or database that entered the data.

YEAR: An optional 4-digit integer for the year of publication of the reference.

TITLE: An optional field of up 1024 characters for the title of the reference.

SOURCE: A mandatory field of up to 1024 characters for the publication details of the reference.

VOLPART: An optional field of up to 36 characters for the volume, issue or part of a serial reference.

PAGES: An optional field of up to 36 characters for the page range of articles in serials. The AGSO standard does not require total number of pages for monographs.

ENTRYDATE: The date the record was entered - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

3.4 AGSOSTATES AUTHORITY TABLE

The **AGSOSTATES** authority table lists states and territories of Australia only, and is required when the country listed in the **SITES** record is set to Australia.

Description of columns

STATEID: Three character identifier for the Australian State or Territory.

STATENAME: Name of the Australian State or Territory

STATEID	STATENAME
ACT	Australian Capital Territory
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
TAS	Tasmania
VIC	Victoria
WA	Western Australia

3.5 AGSOMINERALS AUTHORITY TABLE

The **AGSOMINERALS** authority table is a list of mineral names, their standard abbreviations and classifications into common, ore, and alteration type minerals. The full **AGSOMINERALS** tables has 847 minerals. Only the 135 minerals flagged as 'C', for common mineral, are listed here. Minerals flagged 'O' are economic minerals. The flags are used to provide useful subsets of minerals for use within different databases.

Description of columns

MINABBREV: A 4 character field containing the standard abbreviation for mineral. Each abbreviation is unique.

MINNAME: A 32 character field containing the mineral name.

COMMON: A single character field either null or containing "C", indicating that the mineral is classed as a 'common' mineral.

ORE: A single character field either null or containing "O", indicating that the mineral is classed as an 'ore mineral.

ALTERATION: A single character field either null or containing "A", indicating that the mineral is classed as an 'alteration mineral.

MINABBREV	MINNAME	COMM	ORE
ACT	actinolite	C	
AB	albite	C	
ALN	allanite	C	O
ALM	almandine	C	
ALSI	aluminosilicate	C	
AMPH	amphibole	C	
ANL	analcime	C	
AND	andalusite	C	
ADS	andesine	C	
AN	anorthite	C	
ANR	anorthoclase	C	
ATH	anthophyllite	C	
AP	apatite	C	O
APY	arsenopyrite	C	O
AUG	augite	C	
AZ	azurite	C	O
BRT	barite	C	O
BRL	beryl	C	O

MINABBREV	MINNAME	COMM	ORE
BT	biotite	C	
BN	bornite	C	O
BTW	bytownite	C	
CAL	calcite	C	
CARB	carbonate	C	
CST	cassiterite	C	O
CC	chalcocite	C	O
CCP	chalcopyrite	C	O
CL	chlorite	C	
CLD	chloritoid	C	
CHR	chromite	C	O
CIN	cinnabar	C	O
CLAY	clay mineral	C	O
CAMP	clino-amphibole	C	
CPX	clinopyroxene	C	
CZO	clinozoisite	C	
CRD	cordierite	C	
COR	corundum	C	O

MINABBREV	MINNAME	COMM	ORE
CV	covellite	C	O
CRS	cristobalite	C	
CUM	cummingtonite	C	
CUP	cuprite	C	O
DMD	diamond	C	O
DI	diopside	C	
DOL	dolomite	C	O
EN	enstatite	C	
EP	epidote	C	
FY	fayalite	C	
FELD	feldspar	C	
FSPD	feldspathoid	C	
FL	fluorite	C	O
GN	galena	C	O
GNT	garnet	C	
GLT	glauconite	C	
GLN	glaucophane	C	
GT	goethite	C	O
GR	graphite	C	
GRS	grossular	C	
GP	gypsum	C	O
HL	halite	C	
HEM	hematite	C	O
HBL	hornblende	C	
ILL	illite	C	
ILM	ilmenite	C	O
JD	jadeite	C	O
KFS	k-feldspar	C	
KLN	kaolinite	C	O
KY	kyanite	C	O
LAB	labradorite	C	
LMT	laumontite	C	
LWS	lawsonite	C	
LCT	leucite	C	
MGS	magnesite	C	O
MGT	magnetite	C	O
MAL	malachite	C	O
MCS	marcasite	C	O
MICA	mica	C	O
MC	microcline	C	
MOL	molybdenite	C	O
MNZ	monazite	C	O
MNT	montmorillonite	C	
MS	muscovite	C	
NE	nepheline	C	
OGC	oligoclase	C	
OL	olivine	C	
OPL	opal	C	O
OPQ	opaque mineral	C	
OAMP	orthoamphibole	C	
OR	orthoclase	C	
OPX	orthopyroxene	C	

MINABBREV	MINNAME	COMM	ORE
ASOX	oxidised arsenopyrite	C	
CUOX	oxidised copper minerals	C	
PBOX	oxidised lead minerals	C	
PYOX	oxidised pyrite	C	
ZNOX	oxidised zinc mins	C	
PHL	phlogopite	C	
PHOS	phosphate	C	O
PGT	pigeonite	C	
PL	plagioclase	C	
PRH	prehnite	C	
PMP	pumpellyite	C	
PY	pyrite	C	O
PRP	pyrope	C	
PRL	pyrophyllite	C	
PYRX	pyroxene	C	
PO	pyrrhotite	C	O
QZ	quartz	C	O
RDN	rhodonite	C	O
RT	rutile	C	O
SANI	sanidine	C	
SCP	scapolite	C	
SCH	scheelite	C	O
SRL	schorl	C	
SERI	sericite	C	
SERP	serpentine	C	
SD	siderite	C	
SIL	sillimanite	C	
SPS	spessartine	C	
SP	sphalerite	C	O
SPL	spinel	C	
ST	staurolite	C	
STB	stibnite	C	O
STP	stilpnomelane	C	
SULP	sulphide	C	
TLC	talc	C	O
TTN	titanite	C	
TOZ	topaz	C	
TOUR	tourmaline	C	
TR	tremolite	C	O
TRD	tridymite	C	
USP	ulvospinel	C	
U	uranium	C	O
UROX	uranium oxide mineral	C	
VRM	vermiculite	C	
VES	vesuvianite	C	
ZEOL	zeolite	C	
ZRN	zircon	C	O

3.6 COMMON_PB AUTHORITY TABLE

This table lists the Pb isotopes used for correcting for non-radiogenic (or "common") lead in the sample.

Description of columns

PB_CODE: System generated sequence of unique number.

COMMON_PB: Pb isotope correction used in determining the weighted mean age.

PB_CODE	COMMON_PB
1	207
2	204
3	208
4	uncorrected

3.7 CONTACTS AUTHORITY TABLE

The **CONTACTS** authority table lists different type of geological contacts, and is used when the RECTYPE for the **INTERIZONS** table is set to 'CON'.

Description of columns

CONTACTID: System generated sequence of unique number.

CONTACTNAME: A 32 character field containing the type of contact.

CONTACTID	CONTACTNAME
1	faulted
2	gradational
3	unconformity
4	disconformity
5	nonconformity
6	intrusive

3.8 GEOPROVS AUTHORITY TABLE

This table lists geological provinces, subprovinces and domains. Granitic batholiths are listed as domains.

The table below is sorted by province name alphabetically.

PROVNO	PROVNAME	RANKNAME	PARENTNAME
1	Adavale Basin	Province	
2	Adelaide Fold Belt	Province	
3	Albany-Fraser Province	Province	
371	Alpine Dyke Swarm	Sub-province	New Zealand Intraplate Volcanic Province
4	Amadeus Basin	Province	
5	Arafura Basin	Province	
6	Arckaringa Basin	Province	
7	Arnhem Block	Province	
136	Arnhem Shelf	Sub-province	McArthur Basin

PROVNO	PROVNAME	RANKNAME	PARENTNAME
8	Arrowie Basin	Province	
9	Arunta Block	Province	
112	Ashburton Basin	Province	
305	Atherton	Sub-province	Tertiary Volcanic Province
359	Auckland	Sub-province	New Zealand Intraplate Volcanic Province
10	Bancannia Trough	Province	
11	Bangemall Basin	Province	
380	Barossa Basin	Province	
345	Barrington	Sub-province	Tertiary Volcanic Province
149	Bass Strait Batholith	Domain	Lachlan Fold Belt
404	Bassian Batholith	Domain	Lachlan Fold Belt
150	Bathurst Batholith	Domain	Lachlan Fold Belt
133	Batten Trough	Sub-province	McArthur Basin
318	Bauhinia	Sub-province	Tertiary Volcanic Province
134	Bauhinia Shelf	Sub-province	McArthur Basin
151	Bega Batholith	Domain	Lachlan Fold Belt
278	Bellenden Ker Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
381	Berri Basin	Province	
152	Berridale Batholith	Domain	Lachlan Fold Belt
179	Big Toby Batholith	Domain	Western Fold Belt
379	Bight Basin	Province	
382	Billa Kalina Basin	Province	
12	Birrindudu Basin	Province	
400	Blake Sub-basin	Sub-province	Savory Basin
153	Blue Tier Batholith	Domain	Lachlan Fold Belt
154	Bonang Batholith	Domain	Lachlan Fold Belt
13	Bonaparte Basin	Province	
389	Boolaloo Batholith	Domain	Gascoyne Block
123	Boorabbin Batholith	Domain	Eastern Goldfields Province
436	Bow River Batholith	Province	
14	Bowen Basin	Province	
124	Boyce Batholith	Domain	Eastern Goldfields Province
15	Bremer Basin	Province	
323	Brisbane	Sub-province	Tertiary Volcanic Province
16	Broken Hill Block	Province	
196	Broken River Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
192	Broken River Province	Province	
427	Bryah Basin	Province	
317	Buckland and Mitchell	Sub-province	Tertiary Volcanic Province
320	Bundaberg and Boyne	Sub-province	Tertiary Volcanic Province
238	Burnside Batholith	Domain	Albany-Fraser Province
137	Caledon Shelf	Sub-province	McArthur Basin
386	Callabonna Sub-basin	Sub-province	Lake Eyre Basin
17	Canning Basin	Province	
348	Canobolas	Sub-province	Tertiary Volcanic Province
360	Canterbury & Marlborough	Sub-province	New Zealand Intraplate Volcanic Province
190	Cape York Peninsula Batholith	Domain	Coen Siluro-Devonian Subprovince
191	Cape York Plutonic Belt	Province	
18	Cape York-Oriomo Inlier	Province	
19	Carnarvon Basin	Province	
20	Carpentaria Basin	Province	
432	Carr Boyd Basin	Province	

PROVNO	PROVNAME	RANKNAME	PARENTNAME
390	Carrandibby Batholith	Domain	Gascoyne Block
127	Central Province	Sub-province	Arunta Block
155	Central Victorian Batholith	Domain	Lachlan Fold Belt
340	Central and Doughboy	Sub-province	Tertiary Volcanic Province
129	Chewings Zone	Domain	Southern Province
239	Chiratta Batholith	Domain	Pilbara Block
308	Chudleigh	Sub-province	Tertiary Volcanic Province
21	Clarence-Moreton Basin	Province	
388	Cleve Subdomain	Sub-domain	Gawler Craton
97	Cloncurry-Selwyn Zone	Domain	Eastern Fold Belt
22	Coen Block	Province	
213	Coen Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
211	Coen Siluro-Devonian Subprovince	Sub-province	Cape York Plutonic Belt
188	Coen Subprovince	Sub-province	Coen Block
403	Collie Basin	Province	
346	Comboyne	Sub-province	Tertiary Volcanic Province
200	Connors Arch Subprovince	Sub-province	New England Fold Belt
224	Coolgarra Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
156	Cooma Batholith	Domain	Lachlan Fold Belt
23	Cooper Basin	Province	
225	Copperfield Batholith	Domain	Georgetown Siluro-Devonian Subprovince
157	Corryong Batholith	Domain	Lachlan Fold Belt
201	Croydon Block	Sub-province	Georgetown Block
208	Croydon Cauldron	Domain	Croydon Block
241	Cullen Batholith	Domain	Pine Creek Geosyncline
24	Daly River Basin	Province	
202	Dargalong Inlier	Sub-province	Georgetown Block
25	Darling Basin	Province	
216	Darling Range Batholith	Domain	Western Gneiss Terrane
26	Davenport Geosyncline	Province	
27	Denison Block	Province	
383	Denman Basin	Province	
246	Dido Batholith	Domain	Einasleigh Siluro-Devonian Subprovince
28	Drummond Basin	Province	
195	Drummond Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
29	Duaringa Basin	Province	
347	Dubbo	Sub-province	Tertiary Volcanic Province
375	Dumbano Batholith	Domain	Georgetown Siluro-Devonian Subprovince
30	Dundas Trough	Province	
370	Dunedin Volcanic Group	Sub-province	New Zealand Intraplate Volcanic Province
376	Duntroon Basin	Sub-province	
430	Earaheedy Basin	Province	
352	East Australian leucitite suite	Sub-province	Tertiary Volcanic Province
99	East Kimberley	Sub-province	Kimberley Basin
96	Eastern Fold Belt	Sub-province	Mount Isa Inlier
94	Eastern Goldfields Province	Province	Yilgarn Craton
341	Ebor	Sub-province	Tertiary Volcanic Province
391	Edmund Batholith	Domain	Gascoyne Block
214	Einasleigh Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
205	Einasleigh Siluro-Devonian Subprovince	Sub-province	Cape York Plutonic Belt

PROVNO	PROVNAME	RANKNAME	PARENTNAME
215	Einasleigh Subprovince	Sub-province	Georgetown Block
31	Eromanga Basin	Province	
32	Esk Trough	Province	
226	Esmeralda Batholith	Domain	Croydon Block
33	Eucla Basin	Province	
181	Ewen Batholith	Domain	Western Fold Belt
147	Ewen Block	Domain	Western Fold Belt
209	Featherbed Cauldron Complex	Domain	Hodgkinson Carboniferous-Permian Subprovince
275	Finlayson Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
282	Fly-Highlands Province	Province	
324	Focal Peak	Sub-province	Tertiary Volcanic Province
227	Forsayth Batholith	Domain	Georgetown Inlier
158	Furneaux Batholith	Domain	Lachlan Fold Belt
159	Gabo Island Batholith	Domain	Lachlan Fold Belt
34	Galilee Basin	Province	
35	Gascoyne Block	Province	
36	Gawler Craton	Province	
37	Georgetown Block	Province	
207	Georgetown Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
189	Georgetown Inlier	Sub-province	Georgetown Block
212	Georgetown Siluro-Devonian Subprovince	Sub-province	Cape York Plutonic Belt
38	Georgina Basin	Province	
160	Gingera Batholith	Domain	Lachlan Fold Belt
39	Gippsland Basin	Province	
321	Glass Houses	Sub-province	Tertiary Volcanic Province
113	Glengary Sub-basin	Sub-province	Nabberu Basin
228	Glenmore Batholith	Domain	Einasleigh Subprovince
85	Granites-Tanami Block	Province	
203	Greenvale Subprovince	Sub-province	Broken River Province
161	Grenfell Batholith	Domain	Lachlan Fold Belt
162	Gulgong Batholith	Domain	Lachlan Fold Belt
402	Gunbarrel Basin	Province	
387	Gunnedah Basin	Province	
131	Halls Creek Inlier	Sub-province	Halls Creek Province
40	Halls Creek Province	Province	
41	Hamersley Basin	Province	
312	Hillsborough	Sub-province	Tertiary Volcanic Province
42	Hillsborough Basin	Province	
197	Hodgkinson Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
43	Hodgkinson Fold Belt	Province	
315	Hoy	Sub-province	Tertiary Volcanic Province
268	Ingham Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
384	Itiledoo Basin	Province	
393	Jim Jim Batholith	Domain	Pine Creek Geosyncline
280	Kalinjala Mylonitic Zone	Sub-domain	Gawler Craton
182	Kalkadoon Batholith	Domain	Kalkadoon-Leichhardt Belt
141	Kalkadoon-Leichhardt Belt	Sub-province	Mount Isa Inlier
44	Kanmantoo Fold Belt	Province	
397	Karara Basin	Province	

PROVNO	PROVNAME	RANKNAME	PARENTNAME
45	Karumba Basin	Province	
277	Kelly Saint George Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
46	Kimberley Basin	Province	
132	King Leopold Inlier	Sub-province	Halls Creek Province
163	Kosciusko Batholith	Domain	Lachlan Fold Belt
47	Lachlan Fold Belt	Province	
374	Lake Eyre Basin	Province	
281	Lakefield Basin	Province	
243	Landor Batholith	Domain	Gascoyne Block
48	Laura Basin	Province	
145	Lawn Hill Platform	Domain	Western Fold Belt
49	Leeuwin Block	Province	
146	Leichhardt River Fault Trough	Domain	Western Fold Belt
242	Litchfield Batholith	Domain	Pine Creek Geosyncline
50	Litchfield Block	Province	
343	Liverpool Range	Sub-province	Tertiary Volcanic Province
229	Lolworth Batholith	Domain	Lolworth Subprovince
219	Lolworth Subprovince	Sub-province	Thompson Fold Belt
204	Lolworth-Ravenswood Block	Province	
354	Macedon-Trentham	Sub-province	Tertiary Volcanic Province
303	Maer	Sub-province	Tertiary Volcanic Province
322	Main Range	Sub-province	Tertiary Volcanic Province
270	Malbon Thompson Batholith	Domain	North Queensland Igneous Province
164	Maragle Batholith	Domain	Lachlan Fold Belt
272	Mareeba Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
165	Marulan Batholith	Domain	Lachlan Fold Belt
143	Mary Kathleen Zone	Domain	Eastern Fold Belt
51	Maryborough Basin	Province	
52	McArthur Basin	Province	
307	McBride	Sub-province	Tertiary Volcanic Province
122	Mendlyarri Batholith	Domain	Eastern Goldfields Province
311	Mingella	Sub-province	Tertiary Volcanic Province
244	Minnie Creek Batholith	Domain	Gascoyne Block
351	Monaro, Snowy Mountains, and South Coast	Sub-province	Tertiary Volcanic Province
53	Money Shoal Basin	Province	
319	Monto	Sub-province	Tertiary Volcanic Province
459	Moola Bulla Basin	Province	
166	Moruya Batholith	Domain	Lachlan Fold Belt
230	Mossman Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
240	Mount Edgar Batholith	Domain	Pilbara Block
54	Mount Isa Inlier	Province	
245	Mount Marquis Batholith	Domain	Gascoyne Block
55	Mount Painter Block	Province	
217	Mount Sterling Batholith	Domain	Eastern Goldfields Province
231	Mount Storth Batholith	Domain	Connors Arch Subprovince
120	Murchison Province	Province	Yilgarn Craton
426	Murchison Terrane	Province	Yilgarn Craton
56	Murphy Inlier	Province	
57	Murray Basin	Province	
167	Murrumbidgee Batholith	Domain	Lachlan Fold Belt
58	Musgrave Block	Province	

PROVNO	PROVNAME	RANKNAME	PARENTNAME
148	Myally Shelf	Domain	Western Fold Belt
59	Nabberu Basin	Province	
339	Nandewar	Sub-province	Tertiary Volcanic Province
183	Naraku Batholith	Domain	Eastern Fold Belt
425	Narryer Terrane	Province	Yilgarn Craton
313	Nebo	Sub-province	Tertiary Volcanic Province
60	New England Fold Belt	Province	
357	New Zealand Intraplate Volcanic Province	Province	
355	Newer Volcanics	Sub-province	Tertiary Volcanic Province
61	Ngalia Basin	Province	
279	Norseman-Wiluna Belt	Domain	Eastern Goldfields Province
405	North D'Aguilar Block	Sub-province	New England Fold Belt
100	North Kimberley	Sub-province	Kimberley Basin
369	North Otago	Sub-province	New Zealand Intraplate Volcanic Province
193	North Queensland Igneous Province	Province	
126	Northern Province	Sub-province	Arunta Block
232	Northern Tate Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
62	Northhampton Block	Province	
358	Northland	Sub-province	New Zealand Intraplate Volcanic Province
310	Nulla	Sub-province	Tertiary Volcanic Province
63	Oaklands Basin	Province	
168	Oberon Batholith	Domain	Lachlan Fold Belt
64	Officer Basin	Province	
353	Older Volcanics	Sub-province	Tertiary Volcanic Province
65	Ord Basin	Province	
438	Osmond Basin	Province	
66	Otway Basin	Province	
428	Padbury Basin	Province	
395	Paterson Orogen	Province	
67	Paterson Province	Province	
314	Peak Range	Sub-province	Tertiary Volcanic Province
68	Pedirka Basin	Province	
69	Perth Basin	Province	
70	Pilbara Block	Province	
71	Pine Creek Geosyncline	Province	
72	Polda Basin	Province	
169	Promontory Batholith	Domain	Lachlan Fold Belt
144	Quamby-Malbon Zone	Domain	Eastern Fold Belt
218	Raeside Batholith	Domain	Eastern Goldfields Province
221	Ravenswood (Ordovician) Subprovince	Sub-province	Thompson Fold Belt
233	Ravenswood Batholith	Domain	Ravenswood Siluro-Devonian Subprovince
198	Ravenswood Carboniferous-Permian Subprovince	Sub-province	North Queensland Igneous Province
222	Ravenswood Siluro-Devonian Subprovince	Sub-province	Cape York Plutonic Belt
437	Red Rock Basin	Province	
130	Redbank Thrust Zone	Domain	Central Province
433	Revolver Creek Basin	Province	
234	Robin Hood Batholith	Domain	Georgetown Siluro-Devonian Subprovince
73	Rocky Cape Block	Province	
74	Rum Jungle Block	Province	
398	Savory Basin	Province	

PROVNO	PROVNAME	RANKNAME	PARENTNAME
170	Scottsdale Batholith	Domain	Lachlan Fold Belt
304	Silver Plains, Piebald, and McLean	Sub-province	Tertiary Volcanic Province
75	South Nicholson Basin	Province	
373	South Westland	Sub-province	New Zealand Intraplate Volcanic Province
95	Southern Cross Province	Province	Yilgarn Craton
350	Southern Highlands, Grabben Gullen, Abercrombie, and Kandos	Sub-province	Tertiary Volcanic Province
128	Southern Province	Sub-province	Arunta Block
435	Speewah Basin	Province	
378	Spencer Shelf	Province	
316	Springsure	Sub-province	Tertiary Volcanic Province
78	St Vincent Basin	Province	
76	Stansbury Basin	Province	Adelaide Fold Belt
77	Stuart Shelf	Province	
309	Sturgeon	Sub-province	Tertiary Volcanic Province
79	Styx Basin	Province	
80	Surat Basin	Province	
184	Sybella Batholith	Domain	Western Fold Belt
349	Sydney	Sub-province	Tertiary Volcanic Province
81	Sydney Basin	Province	
82	Sylvania Dome	Province	
356	Tasmania & Bass Strait	Sub-province	Tertiary Volcanic Province
83	Tasmania Basin	Province	
171	Taswegia Batholith	Domain	Lachlan Fold Belt
276	Tate Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
84	Tennant Creek Block	Province	
283	Tertiary Volcanic Province	Province	
434	Texas Downs Basin	Province	
220	Thompson Fold Belt	Province	
274	Thornton Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
368	Timaru and Geraldine	Sub-province	New Zealand Intraplate Volcanic Province
271	Tinaroo Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
385	Tirari Sub-basin	Sub-province	Lake Eyre Basin
86	Torrens Basin	Province	
399	Trainor Platform	Sub-province	Savory Basin
269	Tully Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
172	Tumut Batholith	Domain	Lachlan Fold Belt
325	Tweed	Sub-province	Tertiary Volcanic Province
87	Tyenna Block	Province	
235	Urannah Batholith	Domain	Connors Arch Subprovince
138	Urapunga Tectonic Ridge	Sub-province	McArthur Basin
88	Victoria River Basin	Province	
173	Wagga Batholith	Domain	Lachlan Fold Belt
344	Walcha	Sub-province	Tertiary Volcanic Province
139	Walker Trough	Sub-province	McArthur Basin
306	Wallaroo	Sub-province	Tertiary Volcanic Province
89	Warburton Basin	Province	
342	Warrumbungle	Sub-province	Tertiary Volcanic Province
135	Wearyan Shelf	Sub-province	McArthur Basin
185	Weberra Batholith	Domain	Western Fold Belt
401	Wells Foreland Basin	Sub-province	Savory Basin

PROVNO	PROVNAME	RANKNAME	PARENTNAME
101	West Kimberley	Sub-province	Kimberley Basin
142	Western Fold Belt	Sub-province	Mount Isa Inlier
121	Western Gneiss Terrane	Province	Yilgarn Craton
174	Western Victoria Batholith	Domain	Lachlan Fold Belt
236	White Springs Batholith	Domain	Georgetown Siluro-Devonian Subprovince
186	Williams Batholith	Domain	Eastern Fold Belt
108	Willyama Block	Province	
273	Windsor Batholith	Domain	Hodgkinson Carboniferous-Permian Subprovince
90	Wiso Basin	Province	
439	Wolfe Basin	Province	
431	Wolfe Creek Basin	Province	
175	Wologorong Batholith	Domain	Lachlan Fold Belt
187	Wonga Batholith	Domain	Kalkadoon-Leichhardt Belt
91	Wonominta Block	Province	
210	Woolgar Inlier	Domain	Einasleigh Subprovince
176	Wyangala Batholith	Domain	Lachlan Fold Belt
92	Yambo Block	Province	
396	Yeneena Basin	Sub-province	Paterson Orogen
177	Yeoval Batholith	Domain	Lachlan Fold Belt
429	Yerrida Basin	Province	
93	Yilgarn Craton	Super-province	
392	Yinnetharra Batholith	Domain	Gascoyne Block
178	Young Batholith	Domain	Lachlan Fold Belt
0	unknown	Province	

3.9 GEOREGIONS AUTHORITY TABLE

Geological regions recorded in the **SITES** table are based on Palfreyman's geological provinces (Palfreyman, 1984). They indicate the geographical region in which the sample was collected, unlike the geological provinces GEOLPROV listed in the **ROCKS** table, which are specific to the geological unit. Geological regions cater for drill holes which are, for example, collared in the Karumba Basin and extend into the Proterozoic basement, or samples which are collected at an unconformity between geological provinces. The site location could in this instance be in either province, however, geologically each sample can come from only one province.

REGNO	REGNAME	COUNTRY
2	Adelaide Region	AUS
3	Albany Region	AUS
4	Amadeus Region	AUS
6	Anakie Region	AUS
5	Arafura Region	AUS
7	Arnhem Region	AUS
8	Arrowie Region	AUS
9	Arunta Region	AUS
112	Ashburton Region	AUS
10	Bancannia Region	AUS
11	Bangemall Region	AUS
12	Birrindudu Region	AUS
13	Bonaparte Region	AUS
14	Bowen Region	AUS
15	Bremer Region	AUS
94	Bresnahan Region	AUS

REGNO	REGNAME	COUNTRY
16	Broken Hill Region	AUS
95	Burke River Region	AUS
43	Cairns Region	AUS
97	Caloola Region	AUS
17	Canning Region	AUS
19	Carnarvon Region	AUS
20	Carpentaria Lowlands Region	AUS
83	Central Tasmania Region	AUS
98	Charters Towers Region	AUS
21	Clarence-Moreton Region	AUS
99	Clarke River Region	AUS
22	Coen Region	AUS
24	Daly River Region	AUS
25	Darling Region	AUS

REGNO	REGNAME	COUNTRY
26	Davenport Region	AUS
27	Denison Region	AUS
28	Drummond Region	AUS
29	Duaringa Region	AUS
30	Dundas Region	AUS
31	Eromanga Region	AUS
33	Eucla Region	AUS
282	Fly-Highlands Region	PNG
100	Fraser Region	AUS
34	Galilee Region	AUS
35	Gascoyne Region	AUS
36	Gawler Region	AUS
37	Georgetown Region	AUS
38	Georgina Region	AUS
39	Gippsland Region	AUS
40	Halls Creek Region	AUS
41	Hamersley Region	AUS
44	Kanmantoo Region	AUS
46	Kimberley Region	AUS
101	King Island Region	AUS
102	King Leopold Region	AUS
47	Lachlan Region	AUS
49	Leeuwin Region	AUS
50	Litchfield Region	AUS
51	Maryborough Region	AUS
103	Marymia Region	AUS
52	McArthur Region	AUS
53	Money Shoal Region	AUS
54	Mount Isa Region	AUS
55	Mount Painter Region	AUS
56	Murphy Region	AUS
57	Murray Region	AUS
58	Musgrave Region	AUS
59	Nabberu Region	AUS
60	New England Region	AUS
357	New Zealand Intraplate Volcanic Region	NZ
61	Ngalia Region	AUS
104	Nongra Region	AUS
62	Northampton Region	AUS

REGNO	REGNAME	COUNTRY
105	Northeast Tasmania Region	AUS
64	Officer Region	AUS
65	Ord Region	AUS
66	Otway Region	AUS
67	Paterson Region	AUS
68	Pedirka Region	AUS
69	Perth Region	AUS
70	Pilbara Region	AUS
71	Pine Creek Region	AUS
72	Polda Region	AUS
106	Proserpine Region	AUS
48	Quinkan Region	AUS
73	Rocky Cape Region	AUS
107	Savory Region	AUS
75	South Nicholson Region	AUS
78	St Vincent Region	AUS
77	Stuart Region	AUS
79	Styx Region	AUS
80	Surat Region	AUS
81	Sydney Region	AUS
82	Sylvania Region	AUS
85	Tanami Region	AUS
84	Tennant Creek Region	AUS
108	Tibooburra Region	AUS
86	Torrens Region	AUS
18	Torres Strait Region	AUS
87	Tyennan Region	AUS
88	Victoria River Region	AUS
96	Wilsons Promontory Region	AUS
109	Winnecke Region	AUS
90	Wiso Region	AUS
91	Wonominta Region	AUS
93	Yilgarn Region	AUS
0	unknown	

3.10 GEOTIME AUTHORITY TABLE

This authority table lists geological time terms.

Description of columns

AGENO: A mandatory integer of up to 4 digits automatically allocated by the system.

AGENAME: Mandatory field of 24 characters for the name of the geological age or time term: e.g. 'Permian'.

RANK: Mandatory single-integer field indicating the RANK of the time term, and is a foreign key to the **STRATA.TIMERANKS** table. The current rank terms from the **TIMERANKS** table are as follows-

RANKNO	RANK
1	Eon
2	Erathem
3	Period
4	Epoch
5	Series
6	Stage
7	Substage
8	Unknown

SCOPE: Mandatory single-integer field indicating the SCOPE of the time term: i.e., to what regions does the term apply. This links to the **STRATA.TIMESCOPE** authority table via SCOPENO. For example, the Australian Ordovician Stage names are also used in New Zealand, so the scope description is given as Australasian. The following values are currently valid timescopes in the **TIMESCOPE** authority table:

SCOPENO	DESCRIPTION
1	International
2	Australia
3	Australasia
4	New Zealand
5	United Kingdom
6	North America
7	China

STATUS: Mandatory single-integer field indicating the STATUS of a time term, and links to the **STRATA.TIMESCOPE** table via STATUSNO. There are only three records at present in the **TIMESTATUS** authority table:

STATUSNO	DESCRIPTION
1	Current
2	Obsolete
3	Deleted

PARENT: An optional integer of up to 4 digits that points to the AGENO of the term next higher in rank in the **GEOTIME** table. For example, the parent age for the Ordovician Period is the Palaeozoic Era.

YNGBOUND: An optional 8-digit number field for the absolute youngest age of the geologic time term in million years.

OLDBND: An optional 8-digit number field for the absolute oldest age of the geologic time term in million years.

COMMENTS: An optional 64-character field for any additional comments.

GEODXID: An optional field of up to 6 characters for the **GEODX** reference ID of the primary reference to the time term. This is usually the most authoritative reference to the absolute age boundaries of the unit.

LASTALT: Date field - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992', in which the current date is automatically inserted whenever a new record is entered or an old one updated.

3.11 HMAPS AUTHORITY TABLE

The **HMAPS** table is an authority table for 1:100 000 Map Sheet areas.

Description of columns

HMAPNO: This unique four-digit number identifies any 1:100 000 Australian map.

MMAPID: 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 digits, e.g., 'SF54'. The two digits are the UTM zone, which is needed to convert metric references to latitude and longitude.

QMAPNO: Up to 2 digits identifying the 1:250 000 map sheet from the 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.

HMAPNAME: A field of up to 22 upper case characters for the name of the 1:100 000 map sheet identified by the 1:100 000 Map Number. There are many offshore sheets which are identified as 'UNNAMED'.

N_LAT: The latitude of the northwest corner of the 1:100 000 map sheet in degrees and decimal degrees.

W_LONG: The longitude of the northwest corner of the 1:100 000 map sheet in decimal degrees.

MEAST: The metric easting of the southeast corner of the 1:100 000 map sheet.

MNORTH: The metric northing of the southeast corner of the 1:100 000 map sheet.

STATE1: A three character field for the abbreviation of the state in which the 1:100 000 map sheet is located. Valid state abbreviations are derived from the **AGSOSTATES** authority table. If the map sheet straddles a border the state which covers the most area on the map sheet is recorded in this field.

STATE2: A three-character field for the abbreviation of the state name, which is only used for 1:100 000 map sheets which straddle a border. The state with the least area on the map sheet is recorded in this field. Valid state abbreviations are derived from the **AGSOSTATES** authority table.

3.12 IZ_RECTYPES AUTHORITY TABLE

This is the authority table of record types for the **INTERIZONS** table.

RECTYPE	RECNAME
LTH	Lithology
STR	Structure
STD	STRATDAT Datum
RUB	RockUnitBoundary
SVY	Survey
CON	Contact type
REG	Regolith
RP	Rock Property

3.13 LANDF AUTHORITY TABLE

This is the authority table for landforms.

L_CODE	L_DESC	MAP_CODE
AL00	alluvial landforms	a
AL10	alluvial plain	ap
AL11	flood plain	af
AL12	anastomatic plain	aa
AL13	bar plain	ab
AL14	covered plain	ac
AL15	meander plain	am
AL16	floodout	ao
AL20	alluvial terrace	at
AL30	stagnant alluvial plain	as
AL40	terraced land	al
AL50	alluvial swamp	aw
CO00	coastal lands	c
CO01	beach ridge	cb
CO02	chenier plain	cc
CO03	coral reef	cr
CO04	marine plain	cm
CO05	tidal flat	ct
CO06	coastal dunes	cd
CO07	coastal plain	cp
CO08	beach	cc
DE00	delta	d
DU00	dunefield	u
DU01	longitudinal dune field	ul
ER00	erosional landforms	e
ER10	erosional plain	ep
ER11	pediment	ei
ER12	pediplain	ea
ER13	peneplain	en
ER14	etchplain	ee
ER20	rises	er
ER21	residual rise	eu
ER30	low hills	el
ER31	residual low hill	es

L_CODE	L_DESC	MAP_CODE
ER40	hills	eh
ER50	mountains	em
ER60	escarpment	ec
ER70	badlands	eb
ER80	drainage depression	ed
FA00	fan	f
FA01	alluvial fan	fa
FA02	colluvial fan	fc
FA03	sheet-flood fan	fs
GL00	glacial features	g
GL10	depositional glacial features	gd
GL20	erosional glacial features	ge
KA00	karst	k
MA00	made land	m
ME00	meteor crater	t
PL00	plain	p
PL01	depositional plain	pd
PL02	lacustrine plain	pl
PL03	playa plain	pp
PL04	sand plain	ps
PT00	plateau	l
PT01	plateau edge	le
PT02	plateau surface	ls
VO00	volcano	v
VO01	caldera	vc
VO02	cone (volcanic)	vv
VO03	lava plain	vl
VO04	ash plain	va
VO05	lava flow	vf
VO06	lava plateau	vp

3.14 LITHDATATYPES AUTHORITY TABLE

The **LITHDATATYPES** authority table contains all the lithological attributes associated with a sample and their permitted values.

DATATYPE	TYPEDESC
ALTI	Alteration Intensity
ALT	Alteration Style
BED	Bedding Thickness
COH	Coherence
COL	Colour
COP	Colour pattern
FOS	Fossil
RAD	Gamma Ray Spectrometry (cps)
GS	Grain Size
IOM	Igneous Occurrence Mode
ITX	Igneous Texture
IS	Internal Stratification
MAG	Magnetic sus. (SI Units x 10-5)
MET	Metamorphic Grade
MTX	Metamorphic Texture
PHO	Photodata
REF	Reference
REM	Remarks
RSTR	Rock Strength
SP	Sample Provenance
ST	Sample type
SF	Sampled For
SOM	Sedimentary Occurrence Mode
SS	Sedimentary Structures
STX	Sedimentary Texture
SEQ	Sequence Types
SSTR	Soil Strength
SOR	Sorting
SPH	Sphericity
TEC	Tectonic Features
VEIN	Vein, dyke or sill
WEA	Weathering

3.15 LITHOLOGIES AUTHORITY TABLE

The **LITHOLOGIES** authority table contains all permitted lithological terms which are then classified into qualifiers outlined below.

QUALIFIER	DESCRIPTION
H	
I	igneous
Q	generic (eg: banded)
R	regolith
S	sedimentary
M	metamorphic
U	
Z	

Listed below are the permitted lithological terms, sorted by QUALIFIER then by LITHNAME alphabetically.

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
BX	H	breccia		
CVN	H	carbonate vein	VEIN	19
CLAS	H	clast		
CLBX	H	clast supported breccia	BX	
GOUG	H	gouge		
MQZ	H	massive quartz		
MTX	H	matrix		
MTBX	H	matrix supported breccia	BX	
QZBX	H	quartz breccia	BX	
QZVN	H	quartz vein	VEIN	19
QHBX	H	quartz-hematite breccia	BX	
ROCK	H	rock		
SED	H	sediment		
SINT	H	sinter		
TGWK	H	tuffaceous greywacke	TFT	20
TMST	H	tuffaceous mudstone	TFT	20
TSDS	H	tuffaceous sandstone	TFT	20
TSST	H	tuffaceous siltstone	TFT	20
VEIN	H	vein		19
VEBX	H	vein breccia	BX	
ADK	I	adakite		
AGL	I	agglomerate		
ALB	I	albitite		15
AFG	I	alkali feldspar granite	GRT	2
AFR	I	alkali feldspar rhyolite	RHY	5
AFS	I	alkali feldspar syenite	SYN	3
AIRK	I	alkaline intrusive		9
ALO	I	alnoite	LPY	9
AGB	I	analcime gabbro = teschenite	GAB	9
ANA	I	analcimite	FDT	9
ANT	I	andesite	IVOL	6
ANS	I	anorthosite		2
APL	I	aplite	FIRK	2
ASH	I	ash		
BLT	I	basalt	MVOL	7
BAD	I	basaltic andesite	IVOL	6
BTA	I	basaltic trachyandesite	IVOL	6
BSN	I	basanite		9
BMT	I	benmoreite	TYA	6
BTH	I	bomb, block tephra	TPH	
BON	I	boninite	IVOL	6
CCT	I	calciocarbonatite	CBT	9
CMP	I	camptonite	LPY	9
CBT	I	carbonatite		9
CHAR	I	charnockite	FIRK	2
CHT	I	chromitite		8
CPN	I	clinopyroxene norite	NRT	4
CPT	I	clinopyroxenite	PRX	8
COM	I	comendite	RHY	9
XTUF	I	crystal tuff	TUF	

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
DAC	I	dacite	FVOL	5
DRT	I	diorite	IIRK	3
DLT	I	dolerite	GAB	4
DUN	I	dunite	PER	8
EPCR	I	epiclastic rock	VCR	20
FPY	I	feldspar porphyry		
FIRK	I	felsic intrusive	FRK	2
FLVA	I	felsic lava	FVOL	5
FRK	I	felsic rock	ROCK	
FVOL	I	felsic volcanic	VOLR	5
FNT	I	fenite		15
FGS	I	fergusite	FDT	9
FCT	I	ferrocarbonatite	CBT	9
FFS	I	foid-bearing alkali feldspar sye	SYN	9
FAT	I	foid-bearing alkali feldspar tra	TRC	9
FAN	I	foid-bearing anorthosite	ANS	9
FDR	I	foid-bearing diorite	DRT	9
FBG	I	foid-bearing gabbro	GAB	9
FLT	I	foid-bearing latite	TYA	9
FMD	I	foid-bearing monzodiorite	MZD	9
FMG	I	foid-bearing monzogabbro	MZB	9
FBM	I	foid-bearing monzonite	MZT	9
FSY	I	foid-bearing syenite	SYN	9
FTR	I	foid-bearing trachyte	TRC	9
FDI	I	foid-diorite	DRT	9
FDT	I	foidite		9
FDL	I	foidolite		9
GAB	I	gabbro	MIRK	4
GBN	I	gabbronorite	GAB	4
GRT	I	granite	FIRK	2
GRD	I	granodiorite	FIRK	2
GRP	I	granophyre	FIRK	2
HZB	I	harzburgite	PER	8
HWT	I	hawaiite	TYB	7
MGBS	I	high-Mg basalt		8
HDG	I	hornblende gabbro	GAB	4
HBT	I	hornblendite		8
HYA	I	hyaloclastite		
IGM	I	ignimbrite	TUF	
IJL	I	ijolite	FDL	9
IIRK	I	intermediate intrusive	IRK	3
ILVA	I	intermediate lava	IVOL	6
IRK	I	intermediate rock		
IVOL	I	intermediate volcanic	VOLR	6
KZT	I	kersantite	LPY	9
KBL	I	kimberlite		9
KTT	I	komatiite		8
LPR	I	lamproite		9
LPY	I	lamprophyre		9
LTUF	I	lapilli tuff	TUF	
LTT	I	latite	TYA	6
LAVA	I	lava	VOLR	
LCTT	I	leucitite	FDT	9

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
LHZ	I	lherzolite	PER	8
LBG	I	limburgite	BSN	9
LITF	I	lithic tuff	TUF	
MIRK	I	mafic intrusive	MIRK	4
MLAV	I	mafic lava	MVOL	7
MRK	I	mafic rock	ROCK	
MVOL	I	mafic volcanic	VOLR	7
MCT	I	magnesiocarbonatite	CBT	9
MCH	I	meimechite		8
MPD	I	melilite-bearing peridotite	MLT	9
MPT	I	melilite-bearing pyroxenite	MLT	9
MUV	I	melilite-bearing ultramafic volc	MLT	9
MLT	I	melilitite		9
MLL	I	melilitolite		9
MLG	I	melteigite	FDT	9
MSK	I	miaskite	MSYN	9
MNTT	I	minette	LPY	9
MSS	I	missourite	FDL	9
MCQ	I	monchiquite	LPY	9
MZD	I	monzodiorite	IIRK	3
MZB	I	monzogabbro	MIRK	4
MZG	I	monzogranite	GRT	2
MZT	I	monzonite	IIRK	3
MSYN	I	monzosyenite		9
MUG	I	mugearite	BTA	6
NGB	I	nepheline gabbro = theralite	GAB	9
NMD	I	nepheline monzodiorite = essexit	MZD	9
NMG	I	nepheline monzogabbro = essexite	MZB	9
NSY	I	nepheline syenite	SYN	9
NPH	I	nephelinite	FDT	9
NLL	I	nephelinolite	FDL	9
NRT	I	norite	GAB	4
OBS	I	obsidian	FVOL	5
OCP	I	olivine clinopyroxenite	PRX	8
OHP	I	olivine hornblende pyroxenite	PRX	8
OHT	I	olivine hornblendite	HBT	8
OMT	I	olivine melilitite	MLT	9
OML	I	olivine melilitolite	MLL	9
OOP	I	olivine orthopyroxenite	PRX	8
OWT	I	olivine websterite	PRX	8
OPHL	I	ophiolite	MVOL	7
OFG	I	opx alkali feldspar granite	GRT	2
OFS	I	opx alkali feldspar syenite	SYN	3
ODT	I	opx diorite = norite	DRT	3
OGT	I	opx granite = charnockite	GRT	2
OGD	I	opx granodiorite = opdalite	GRD	2
OMD	I	opx monzodiorite = jotunite	MZD	3
OMZ	I	opx monzonite = mangerite	MZT	3
OST	I	opx syenite	SYN	3
OTT	I	opx tonalite = enderbite	TNL	2
OPT	I	orthopyroxenite	PRX	8
PTT	I	pantellerite	RHY	9
PEG	I	pegmatite	FIRK	2

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
PKR	I	peralkaline rhyolite	RHY	9
PER	I	peridotite		8
PNT	I	phonolite		9
PBS	I	phonolitic basanite	BSN	9
PFD	I	phonolitic foidite	FDT	9
PTR	I	phonolitic tephrite	TPT	9
PCT	I	picrite	MVOL	7
PBT	I	picrobasalt	BLT	8
PHD	I	plagioclase-bearing hornblendite	HBT	8
PPX	I	plagioclase-bearing pyroxenite	PRX	8
PLZ	I	polzenite	LPY	9
PHY	I	porphyry		
PTB	I	potassic trachybasalt	TYB	7
PYCR	I	pyroclastic rock	VCR	20
PHG	I	pyroxene hornblende gabbro	GAB	4
PHP	I	pyroxene hornblende peridotite	PER	8
PHT	I	pyroxene hornblendite	HBT	8
PML	I	pyroxene melilitolite	MLL	9
POM	I	pyroxene olivine melilitolite	MLL	9
PPD	I	pyroxene peridotite	PER	8
PRX	I	pyroxenite		8
QAS	I	quartz alkali feldspar syenite	SYN	3
QZA	I	quartz anorthosite	ANS	2
QZD	I	quartz diorite	DRT	3
QFPY	I	quartz feldspar porphyry	PHY	
QFRK	I	quartz feldspar rock		
QGB	I	quartz gabbro	GAB	4
QZL	I	quartz latite	TYA	6
QMD	I	quartz monzodiorite	MZD	3
QMG	I	quartz monzogabbro	MZB	4
QZM	I	quartz monzonite	MZT	3
QZPY	I	quartz porphyry	PHY	
QZS	I	quartz syenite	SYN	3
QTY	I	quartz trachyte	TRC	5
QZG	I	quartz-rich granitoid		2
QTE	I	quartzolite	QZG	15
RHD	I	rhyodacite	DAC	5
RHY	I	rhyolite	FVOL	5
SAN	I	sannaite	LPY	9
SHK	I	shonkinite	SYN	9
SHT	I	shoshonite	BTA	6
SMD	I	sodalite monzodiorite	MZD	9
SSY	I	sodalite syenite	SYN	9
SDT	I	sodalitite	FDT	9
SPT	I	spessartite	LPY	9
SPIL	I	spilite	MVOL	7
SYN	I	syenite	IIRK	3
SYG	I	syenogranite	GRT	2
TPH	I	tephra		
TPT	I	tephrite		9
TFD	I	tephritic foidite	FDT	9
TPL	I	tephritic phonolite	PNT	9
TNL	I	tonalite	FIRK	2

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
TYA	I	trachyandesite	IVOL	6
TYB	I	trachybasalt	MVOL	7
TYD	I	trachydacite	DAC	5
TRC	I	trachyte	IVOL	6
TTL	I	troctolite	GAB	4
TDJ	I	trondhjemite	TNL	2
TUF	I	tuff		
TFT	I	tuffite		
UMRK	I	ultramafic		
UVOL	I	ultramafic volcanic	VOLR	
URT	I	urtite	FDL	9
VTUF	I	vitric tuff	TUF	
VGT	I	vogesite	LPY	9
VBX	I	volcanic breccia	VCR	20
VOLR	I	volcanic rock		
VCR	I	volcaniclastic rock	VOLR	
WEB	I	websterite	PRX	8
WHL	I	wehrlite	PER	8
ATRK	M	altered rock		
AMP	M	amphibolite		12
AUGN	M	augen gneiss	GNS	
CSRK	M	calc-silicate rock		
EGL	M	eclogite		12
GNS	M	gneiss		13
GFL	M	granofels		
GRN	M	granulite		
GST	M	greenstone		12
GRSN	M	greisen		15
HFL	M	hornfels		
MBL	M	marble		14
METB	M	metabasite		
METS	M	metasediment		14
MTS	M	metasomatite		15
MIG	M	migmatite		13
MYL	M	mylonite		
PHYL	M	phyllite		14
PSAM	M	psammopelite		14
QZT	M	quartzite		14
SCHT	M	schist		
SRP	M	serpentinite		12
SKN	M	skarn		15
SLA	M	slate		14
TOUM	M	tourmalinite		
ABND	Q	abundant		
ADC	Q	adcumulate		
AEOL	Q	aeolian		
AGAL	Q	algal		
ALK	Q	alkali		
ALT	Q	altered		
AL	Q	aluminous		
AMY	Q	amygdaloidal		
APH	Q	aphanitic		
ARE	Q	arenaceous		

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
AR	Q	argillic		
ARK	Q	arkosic		
BA	Q	banded		
BLTC	Q	basaltic		
BAS	Q	basic		
BED	Q	bedded		
BTM	Q	bitumenous		
BLE	Q	bleached		
BLK	Q	blocky		
BOT	Q	botryoidal		
BO	Q	bouldery		
BR	Q	brecciated		
CS	Q	calc-silicate		
CALC	Q	calcareous		
CLC	Q	calcic		
CAR	Q	carbonaceous		
CHEM	Q	chemical		
CHY	Q	cherty		
CLT	Q	chloritic		
CLSS	Q	clast supported		
CLAC	Q	clastic		
C	Q	coarse		
CGC	Q	conglomeratic		
XL	Q	crystal		
CUMM	Q	cumulate		
CYC	Q	cyclic		
DK	Q	dark		
DIA	Q	diapiric		
DMT	Q	dolomitic		
EPC	Q	epiclastic		
EQ	Q	equigranular		
EU	Q	eutaxitic		
EXV	Q	extrusive		
FA	Q	fault		
FEL	Q	feldspathic		
FOI	Q	feldspathoidal		
FLS	Q	felsic		
FER	Q	ferruginous		
FIA	Q	fiamme		
F	Q	fine		
FGR	Q	fine grained		
FLAG	Q	flaggy		
FOID	Q	foid		
FO	Q	foliated		
FR	Q	fractured		
FRI	Q	friable		
GL	Q	glassy		
GSN	Q	gossanous		
GRAN	Q	granitic		
GPT	Q	graphitic		
GTY	Q	gritty		
HM	Q	hematitic		
HET	Q	heterolithic		

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
HK	Q	high-K		
HMG	Q	high-Mg		
HGR	Q	high-grade		
MAG	Q	highly magnetic		
ITM	Q	intermediate		
ITV	Q	intrusive		
JSP	Q	jaspilitic		
KA	Q	kaolinised		
LA	Q	laminated		
LPL	Q	lapilli		
LAT	Q	lateritic		
LAY	Q	layered		
LEA	Q	leached		
LCC	Q	leucocratic		
LT	Q	light		
LIM	Q	limonitic		
LI	Q	lineated		
LTH	Q	lithic		
LK	Q	low-K		
LGR	Q	low-grade		
MAF	Q	mafic		
MGSN	Q	magnesian		
MAS	Q	massive		
MTXS	Q	matrix supported		
MK	Q	medium-K		
MEG	Q	megacrystic		
MCC	Q	melanocratic		
MCL	Q	mesocumulate		
MET	Q	meta		
METM	Q	metamorphosed		
MIC	Q	micaceous		
MIO	Q	micro		
MX	Q	microcrystalline		
MIGM	Q	migmatitic		
MIK	Q	milky		
MON	Q	monomictic		
MDY	Q	muddy		
MY	Q	mylonitic		
NOD	Q	nodular		
OO	Q	oolitic		
ORG	Q	organic		
ORT	Q	ortho		
OCL	Q	orthocumulate		
PALE	Q	pale		
PAR	Q	para		
PBY	Q	pebbly		
PEL	Q	pelitic		
PERA	Q	peralkaline		
PHC	Q	phosphatic		
PCR	Q	picro		
POD	Q	poddy		
POIK	Q	poikilitic		
PLY	Q	polymict		

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
POOR	Q	poor		
P	Q	poorly sorted		
PORS	Q	porous		
POR	Q	porphyritic		
POT	Q	potassic		
PSC	Q	psammitic		
PBX	Q	pseudobrecciated		
PYR	Q	pyritic		
PYC	Q	pyroclastic		
QF	Q	quartzo-feldspathic		
RDL	Q	radiolarian		
RX	Q	recrystallised		
RES	Q	residual		
RSNS	Q	resinous		
RTRO	Q	retrograde		
REW	Q	reworked		
RL	Q	rhythmic-layered		
RICH	Q	rich		
SA	Q	sandy		
SCHS	Q	schistose		
SERC	Q	sericitic		
SH	Q	sheared		
SILI	Q	siliceous		
SI	Q	silicified		
SLY	Q	silty		
SDC	Q	sodic		
SPCR	Q	specular		
STRO	Q	stromatilitic		
SUL	Q	sulphidic		
TPI	Q	tephri		
THL	Q	tholeiitic		
TCY	Q	trachy		
TFC	Q	tuffaceous		
UB	Q	ultrabasic		
UM	Q	ultramafic		
UND	Q	undifferentiated		
UNW	Q	unwelded		
VND	Q	veined		
VE	Q	vesicular		
VI	Q	vitric		
VOL	Q	volcanic		
VCC	Q	volcaniclastic		
WEA	Q	weathered		
WEL	Q	welded		
ALUV	R	alluvium		17
CLCR	R	calcrete	DUR	17
CLY	R	clay		17
COLV	R	colluvium		17
DUR	R	duricrust		17
DST	R	dust		17
FRCT	R	ferricrete	DUR	17
GO	R	gossan		17
GSQ	R	gossanous quartz	GO	17

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
GVL	R	gravel		17
GRU	R	grus		17
LAG	R	lag		17
LATT	R	laterite		17
LOM	R	loam		17
LOS	R	loess		17
MUD	R	mud		17
PLDZ	R	pallid zone		17
PIS	R	pisolite		17
PIST	R	pisolitic ironstone	DUR	17
SND	R	sand		17
SPRK	R	saprock		17
SPLT	R	saprolite		17
SCRE	R	scree		17
SLCT	R	silcrete	DUR	17
SLT	R	silt		17
SOIL	R	soil		17
AMBR	S	amber		
ANTH	S	anthracite	COAL	
ARNT	S	arenite		10
AGLT	S	argillite		10
ARKS	S	arkose		10
BIF	S	banded iron formation	IRFM	
BHRK	S	beachrock		10
BIOC	S	biocarbonate		11
BIOM	S	biomicrite		11
BIOS	S	biosparite		11
BIT	S	bitumen		
BLSH	S	black shale	SHLE	10
BNBD	S	bone bed		11
BLD	S	boulder		10
BDST	S	boundstone		11
CALR	S	calcarenite	ARNT	11
CALU	S	calcilutite		11
CBIF	S	carbonate iron formation	IRFM	
CBRK	S	carbonate rock		
CRNL	S	carnieule		11
CHLK	S	chalk		11
CHRT	S	chert		11
CLST	S	claystone		10
COAL	S	coal		
CNGL	S	conglomerate		10
CQNA	S	coquina		11
CORL	S	coral		
DMCT	S	diamictite		10
DTMT	S	diatomite		10
DLAR	S	dolarenite	ARNT	11
DLST	S	dolostone		11
EVPT	S	evaporite		11
FGLT	S	fanglomerate		10
FLNT	S	flint		11
FOS	S	fossil		
GYST	S	geyserite		11

LITHID	QUALIFIER	LITHNAME	PARENT	ROCKTYPE
GNST	S	grainstone		11
GPST	S	grapestone		11
GSD	S	greensand		
GYWK	S	greywacke		10
GUN	S	guano		11
GYT	S	gyttja		11
IRFM	S	iron formation		11
IRST	S	ironstone		11
JASP	S	jasper		11
JSPL	S	jaspilite	IRFM	11
LIG	S	lignite	COAL	
LMST	S	limestone		11
MGST	S	magnesite		
MTIF	S	magnetite iron formation	IRFM	
MARL	S	marl		10
MCRT	S	micrite		11
MDST	S	mudstone		10
NFOS	S	nanofossil		
NVLT	S	novaculite		10
OOZ	S	ooze		
OXIF	S	oxide iron formation	IRFM	
PKST	S	packstone		
PEAT	S	peat		
PELT	S	pelite		10
PHSP	S	phosphorite		11
PCLN	S	porcellanite		10
PSMT	S	psammite		10
RDLT	S	radiolarite		10
SDST	S	sandstone		10
SDBX	S	sedimentary breccia	SED	10
SHLE	S	shale		10
SLST	S	siltstone		10
SPGT	S	sparagmite		10
SUIF	S	sulphide iron formation	IRFM	
TLL	S	till		10
TLLT	S	tillite		10
TLLD	S	tilloid		10
TORB	S	torbanite		
TRVN	S	travertine		11
TBDT	S	turbidite		10
CAV	U	cavity		
MNRK	U	manganese rock		
MSI	U	massive silica		
QMRK	U	quartz magnetite rock		
WD	U	wood		
MTRK	Z	magnetite rock		16
MSU	Z	massive sulphide		
ORE	Z	ore		
SURK	Z	sulphide-rich material		16

3.16 LITHUNITS AUTHORITY TABLE

This table is for lithological map unit symbols and definitions. It is primarily for identifying units in Archaean terranes where no formal stratigraphy has been defined. Map symbols are unique for each province. Note: Yilgarn is the only province with symbols in this table so far. The development of province-wide stratigraphy with matching geological units having the same symbol between sheets facilitates the easy integration of the data within a GIS.

Description of Columns

MAPSYMBOL: A mandatory 8-character mandatory field for the characters which comprise the map symbol.

PROVNO: A mandatory number field of up to 5 digits for the geological province in which the unit occurs. Valid codes for geological provinces are derived from the GEOPROVS table.

UNITNAME: 128-character field for the name or description of the map unit.

3.17 LOCMETHODS AUTHORITY TABLE

This table is for the method by which the locality of a sample was determined, and the maximum accuracy measure in metres allowed for a given method.

METHODNO	LOCMETHOD	ACCURACY
0	unknown	
1	GPS observation (WGS84 - World Geodetic System 1984)	100
2	GPS observation (AGD66 - Australian Geodetic Datum 1966)	100
3	GPS observation (AGD84 - Australian Geodetic Datum 1984)	100
4	GPS observation (GDA94 - Geocentric Datum of Australia 1994)	100
5	astronomical observation	
6	surveyed from ground control	5
7	published report	
8	unpublished report	
10	non-standard topographic map	
11	1:25 000 topographic map	25
12	1:50 000 topographic map	50
13	1:100 000 topographic map (AMG66)	100
14	1:250 000 topographic map	250
15	1:500 000 topographic map	500
16	1:1 000 000 topographic map	1000
20	non-standard geological map	
21	1:25 000 geological map	25
22	1:50 000 geological map	50
23	1:100 000 geological map (AMG66)	100
24	1:250 000 geological map	250
25	1:500 000 geological map	500
26	1:1 000 000 geological map	1000
30	Differential GPS - Survey quality (WGS84)	1
31	Differential GPS (AGD66)	2
40	Orthophoto image	
41	Orthophoto image 1:25 000 scale	10

3.18 MEAN_METHOD AUTHORITY TABLE

This table lists the methods available for calculating the mean analysis values for each ion probe analysis. Each analysis on a zircon grain consists of between 5 and 7 measurements from which the mean is calculated.

METHODNO	METHOD
1	Linear data fits (Claoue-Long, Maxwell)
2	Curved data fits (Ireland)
3	Combination - linear fits used to derive interelement ratios, curved fits used to derive intraelement ratios

3.19 METHODS TABLE

This table describes the analytical methods used in deriving the analyses. It will be noted that all the methods listed here are for geochemical analyses. It was intended to also use this table for listing analysis methods for OZCHRON, however up to this stage no methods for OZCHRON have been added. Therefore this table is not required for OZCHRON, however it was decided to include it for completeness.

METHODNO	METHOD
1	unknown
2	XRF (Norrish & Hutton, 1969); FeO Vol.; LOI Grav.
3	XRF (Norrish & Hutton, 1969); FeO Vol.; H2O+, H2O-, & CO2 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, H2O(total), CO2 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 INA; U delayed neutron count
12	XRF (Norrish & Chappell, 1977).
13	XRF (Norrish & Chappell, 1977); Co Cu Ni Pb Zn by emiss. spectrm
14	ICP,AES Inductively Coupled Plasma, Atomic Emission Spectroscopy
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, Pb collection, ICP-MS finish (30g samp)
30	Direct-reading optical spectrograph (DROS), BMR.
31	XRF (Norrish & Hutton, 1969), LOI Grav. by University of WA

METHODNO	METHOD
32	GSWA Government Chemical Laboratories.
33	Isotope dilution mass spectrometry, Sun & Nesbitt (1978)
34	XRF Nesbitt & Stanley (1980); traces
35	XRF (Nesbitt, et al, 1976); traces, by pressed powders
36	XRF (N&H, 1969, N&C 1977) at ANU; FeO, H2O+, H2O-, CO2 grav LaTb
37	Wet chemistry by University of WA (O'Beirne, 1968)
38	XRF (Mo,Sr,Rb,Pb,As,Zn,Cu,Ni,Cr), AAS (Li) (UWA: O'Beirne, 1968)

3.20 ORIGINATORS AUTHORITY TABLE

This table generally refers to the collector of the sample in the field, and is sorted below alphabetically. With some AGSO authors, it is possible to refer to original sample notebooks which are archived at AGSO in order to obtain more precise location descriptions of samples of interest.

ORIGNO	ORIGINATOR
77	ANU RSES
237	Abell, R.S.
304	Abeysinghe, A.
265	Adamides, N.G.
121	Adams, C.J.
78	Allen, A.R.
266	Apak, S.N.
129	Arriens, P.A.
319	Aspin, S.J.
257	Audetat, A.
267	Backhouse, J.
98	Bagas, L.
118	Bailey, J.
51	Bain, J.H.C.
224	Bajwah, Z.
268	Bandy, S.J.
132	Barton, J.M.
230	Bastrakov, E.N.
311	Beirworth, P.
174	Bennett, V.C.
55	Bettenay, L.
56	Black, L.P.
2	Blake, D.H.
119	Blewett, R.S.
258	Bodorkos, S.
79	Bofinger, V.M.
324	Bradshaw, B.
245	Brakel, A.
3	Branch, C.D.
260	Brauhart, C.
228	Brown, M.C.
335	Budd, A.
4	Bultitude, R.J.
145	CSIRO-Yilgarn data
226	Camacho, A.
196	Campbell, I.D.

ORIGNO	ORIGINATOR
269	Carlsen, G.M.
261	Carson, L.
137	Cassidy, K.F.
270	Chakraborty, K.K
170	Champion, D.
181	Chan, R.A.
120	Chappell, B.W.C.
25	Chapple, K.
272	Chen, C.F.
88	Chin, R.J.
183	Churchward, M.
323	Claoue-Long, J.C.
249	Clark, W.
197	Clarke, G.
111	Collins, W.J.
142	Compston, D.M.
95	Compston, W.
154	Connors, K.A.
340	Conor, C.H.H.
35	Cook, P.
235	Cooke, D.
82	Cooper, J.A.
305	Cooper, R.W.
271	Copp, I.A.
244	Cox, S.F.
182	Craig, M.A.
200	Cranfield, L.
157	Creaser, R.A.
64	Crick, I.
348	Crispe, A.
273	Crostella, A.
6	Croxford, W.
7	Cruikshank, B.I.
87	Currie, K.L.
342	D'Addario, G.W.
10	Dallwitz, W.B.

ORIGNO	ORIGINATOR
337	Davy, R.
81	De Laeter, J.R.
11	Derrick, G.M.
101	Dobos, S.K.
184	Dohrenwend, J.C.
330	Domagala, J.
201	Donchak, P.
12	Duff, B.
75	Duggan, M.B.
322	Edgecombe, S.M.
134	Edgoose, C.
13	Ellis, D.J.
14	England, R.N.
28	Etheridge, M.
15	Ewers, G.R.
274	Farrell, T.R.
58	Ferguson, J.
275	Ferguson, K.M.
306	Fetherston, M.
191	Fleming, C.
139	Fletcher, I.R.
102	Foden, J.D.
344	Foster, C.
326	Fraser, S.
336	Fredericks, D.
96	Freeman, M.J.
180	GSQ (Geol Surv of Qld)
5	Gardner, C.
80	Gee, R.D.
234	Geol. Survey of N.S.W.
276	Ghori, K.A.R.
190	Gibson, D.L.
262	Gibson, G.
149	Giles, C.W.
17	Glikson, A.Y.
203	Goldrick, G.
243	Goleby, B.R.
185	Gozzard, R.
85	Gray, C.M.
251	Gregory, I.
130	Grew, E.S.
277	Grey, K.
151	Griffin, T.J.
186	Grimes, K.
167	Gunther, M.
222	Haines, P.
202	Halfpenny, R.
159	Hamlyn, P.R.
155	Hancock, S.L.
264	Haren, R.
233	Harley, S.L.
204	Harris, D.
307	Hassan, L.Y.

ORIGNO	ORIGINATOR
278	Havord, P.J.
187	Hazell, M.
59	Hegge, M.R.
113	Heinrich, C.A.
115	Henderson, G.A.M.
206	Henry, R.
279	Hickman, A.A.
33	Higgins, N.C.
114	Hill, R.I.
19	Hill, R.M.
65	Hills, J.
160	Hine, R.
240	Hinman, M.C.
8	Hoatson, D.M.
280	Hocking, R.M.
347	Holliday, J.
20	Holmes, R.D.
303	Huston, D.L.
21	Hutton, L.J.
281	Iasky, R.P.
239	Idnurm, M.
207	Jackson, M.J.
94	Jagodzinski, E.A.
24	Jaques, A.L.
165	Johnson, J.P.
52	Johnson, R.W.
116	Johnston, C.
99	Joklik, G.F.
327	Jones, M.
63	Joplin, G.
229	Jung, P.
177	Kamprad, J.
328	Kent, A.J.R.
112	Kinny, P.D.
162	Kjolle, I.
166	Knight, J.
23	Knutson, J.
282	Kojan, C.J.
100	Korsch, R.
107	Kralik, M.
195	Krassay, A.
227	Krcmarov, R.
22	Lambert, I.
283	Langford, R.L.
92	Langworthy, A.P.
163	Lanyon, R.
27	Lewis, J.D.
312	Lindsay, J.
256	Liu, S
208	Logan, R.G.
86	Ludwig, K.R.
241	Lyons, P.
93	MESA - Mines Energy SA

ORIGNO	ORIGINATOR
209	MINDEP
211	MINLOC
210	MINOCC
214	MLU Geochem Survey Gp
144	Maas, R.
29	Mackenzie, D.E.
220	Madigan, T.
263	Maidment, D.
90	Marjoribanks, R.W.
161	Mason, D.R.
310	McConachie, B.
125	McCulloch, M.T.
109	McDougall, I.
236	McGoldrick, P.
232	McKee, C.
253	McMahon, T.P.
30	McNaughton, N.J.
225	McPhie, J.
318	Mernagh, T.
286	Meyers, J.S.
54	Miller, A.
349	Min. Res. Tas.
31	Mitchell, J.M.
32	Mock, C.M.
284	Morris, P.A.
259	Morrison, R.S.
333	Morrow, N.
89	Mortimer, G.E.
285	Mory, A.J.
317	Munday, T.
175	NPD (Nat Petrol Dbase)
40	Needham, R.S.
287	Nelson, D.R.
146	Netherway, N.M.
135	O'Beirne, W.
288	Occhipinti, S.A.
97	Offe, L.A.
138	Ogasawara, M.
152	Ojala, J.
188	Ollier, C.D.
34	Oversby, B.S.
346	PIRSA
37	Page, R.W.
189	Pain, C.F.
313	Payne, N.
123	Pearson, P.J.
57	Pederson, C.P.
192	Peljo, M.
289	Perincek, D.
339	Perkins, C.
140	Perring, C.S.
332	Pidgeon, B.
104	Pidgeon, R.T.

ORIGNO	ORIGINATOR
156	Pieters, P.E.
221	Pietsch, B.
290	Pirajno, F.
38	Plumb, K.A.
199	Pollard, P.
250	Pope, J.
147	Price, R.
231	Radke, B.
124	Rao, C.P.
127	Rattenbury, M.S.
223	Rawlings, D.
172	Raymond, O.L.
212	Rees, I.
66	Rhodes, J.
117	Richards, D.
108	Richards, J.R.
334	Richmond, J.
168	Rienks, I.P.
103	Roarty, M.J.
343	Roberts, J.
61	Roberts, W.M.B.
291	Rogerson, R.J.
292	Ruddock, I.
179	Ryburn, R.J.
331	Sami, T.
133	Sandiford, M.
41	Santul, J.
173	Schiotte, L.
293	Scillieri, R.C.
316	Scott, D
308	Sedgmen, A
69	Shaw, R.D.
193	Shaw, S.E.
294	Sheppard, S.
42	Sheraton, J.W.
295	Shevchenko, S.I.
131	Shibata, K.
345	Sims, J.
252	Skirrow, R.G.
67	Smart, P.
350	Smith, J.B.
43	Smith, S.E.
296	Smithies, R.H.
106	Southgate, P.N.
338	Stevens, B.P.J.
297	Stevens, M.K.
70	Stewart, A.J.
255	Stewart, K.P.
74	Stratton, J.
320	Street, M.
254	Streit, J.E.
73	Stuart, J.E.
36	Stuart-Smith, P.G.

ORIGNO	ORIGINATOR
246	Sun, S.
298	Svalbe, A.K.
299	Swager, C.P.
68	Sweet, I.P
321	Sweetapple, M.
219	Szychowska, L.
18	Tanaka, H.
341	Taylor, G.
153	Taylor, W.R.
300	Thorne, A.M.
242	Thost, D.E.
247	Tingey, R.J.
164	Trail, D.S.
315	Tripp, G.
44	Tunks, A.
110	Turek, A.
122	Turner, N.J.
150	Tyler, I.M.
39	Valenta, R.
126	Vanderhor, F.
105	W.A. Geological Survey
136	Wakelin-King, G.
194	Wall, V.J.
45	Wallace, D.A.
62	Walpole, B.
248	Wang, Q.
16	Warren, R.G.
72	Watchman, A.
ORIGNO	ORIGINATOR

91	Webb, A.W.
309	Wellman, P.
325	Wells, A.
301	Westaway, J.M.
158	Whalen, J.B.
218	Whitaker, A.J.
329	Wiedenbeck, M.
176	Wilford, J.
60	Wilkes, P.G.
302	Williams, I.R.
53	Williams, P.R.
83	Williams, S.J.
46	Willmott, W.F.
47	Wilson, I.H.
84	Windrim, D.P.
48	Withnall, I.W.
198	Witt, W.K.
314	Woods, B
238	Worrall, L.
49	Wyborn, D.
50	Wyborn, L.A.I.
71	Wyche, S.
76	Yeates, A.N.
128	Young, D.N.
351	Young, G.C.
171	Zhao, J.-X.
1	unknown
213	von Gnielinski, F.

3.20 THE PROVRANKS AUTHORITY TABLE

This table is for indicating the rank of geological provinces in the GEOPROVS table. Valid terms are listed below:

RANKNO	RANKNAME
1	Province
2	Sub-province
3	Domain
4	Sub-domain
0	Super-province

3.21 QMAPS AUTHORITY TABLE

The **QMAPS** table is an authority table for 1:250 000 Map Sheet areas.

Description of columns

MAPNO: A mandatory field of up to 6 characters identifying the 1:250 000 map sheet e.g., 'SF5412', 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.

MAPNAME: A mandatory field of up to 22 upper case characters for the name of the 1:250 000 map sheet identified by the 1:250 000 Map Number.

N_LAT: The latitude of the northwest corner of the 1:250 000 map sheet in degrees and decimal degrees.

W_LONG: The longitude of the northwest corner of the 1:250 000 map sheet in decimal degrees.

3.22 ROCKTYPES AUTHORITY TABLE

This table provides a basic subdivision of samples based on rock type. It is intended primarily for database management and block retrieval.

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

ROCKNO	ROCKTYPE
12	metabasite
13	felsic gneiss
14	metasediment
15	metasomatite
16	mineralisation
17	regolith
19	vein
20	volcaniclastic
21	tectonite

3.23 SECTYPES AUTHORITY TABLE

This table is a lists types of drill holes or sections described in the **SECTHOLES** table.

CODE	SECTION TYPE
P	Petroleum Well
W	Water Bore
M	Mineral Drill Hole
S	Surface Measured Section
C	Costean or Trench
A	Mine Adit or Shaft
E	Engineering Drill Hole
G	Geological Drill Hole
Z	Seismic Drill Hole

3.25 STRATLEX AUTHORITY VIEW

STRATLEX is a view of the Australian Register of Stratigraphic Names. It contains the names of approximately 15 000 stratigraphic units which are in current usage. It is derived from the GEODX database of stratigraphic names, administered by Stratigraphic Index staff of AGSO. Additional information for each unit covering such things as age, parent units, and overlying and underlying units is continually being added. Information on stratigraphic names can now be viewed online through the AGSO

home page on the world wide web. Information provided includes currency, superseded names, if the name has been replaced by another and defining references.

The web address for the AGSO home page is: **http://www.agso.gov.au/**

Description of columns

UNITNO: A unique system-supplied integer of up to 5 digits.

UNITNAME: Mandatory field of 50 characters for the name of the stratigraphic unit, including any rank term that may be part of the name, e.g., 'Soldiers Cap Group' (where 'Group' is the rank term). Where a unit occurs in more than one state, the abbreviation of the state appears in brackets after the name of the stratigraphic unit.

RANK: A single-digit field to indicate stratigraphic rank. Valid ranks are derived from the **STRATRANKS** authority table listed below:

RANKNO	RANKNAME
1	Supergroup
2	Group
3	Subgroup
4	Formation, beds
5	Member
6	Bed
7	unknown

STATUS: A mandatory 2-digit field for the status of the unit. Valid status codes are derived from the **STRATSTATUS** authority table listed below:

STATUS	STATUSNAME
1	Redefined
2	Defined
3	Fully described
4	Described
5	Briefly described
6	Mentioned
7	Reserved
8	Informal
9	Superseded
10	Probably obsolete
11	Obsolete
12	Probably misspelt
13	Misspelt
14	Not recorded
99	Processing pending

AGE1: An integer of up to 4 digits pointing to the older age limit of the stratigraphic unit. This integer corresponds to a term from the **GEOTIME** authority table. Where no younger age limit is given, AGE1 is taken to be a general age for the unit as a whole.

AGE2: As for the AGE1 pointer, but referring to a younger age limit for the unit, if known.

GEOLPROV: An integer of up to 5 digits pointing to the geological province in the **GEOPROVS** table.

COMMENTS: A field of 255 characters for comments on the unit, particularly those on any synonym and the history of definition and nomenclature. Any conflicts with other stratigraphic names in **STRATLEX** can also be noted.

Type Area Data:

TYPESTATE: A three-capital character field for the State in which the type area lies.

PARENT: An integer of up to 5 digits. The unit number of the parent stratigraphic unit, i.e., the related unit that is higher in rank. For example, the parent unit for a Member would always be a Formation, while the parent unit for a Formation could be a Group or a Subgroup.

OVERLYING: An integer of up to 5 digits. The stratigraphic unit number of the overlying stratigraphic unit.

OVEREL: Integer fields indicating boundary relationships to the overlying units. Valid numbers and terms are stored in the **STRATRELS** authority table.

UNDERLYING: An integer of up to 5 digits. The stratigraphic unit number of the underlying stratigraphic unit.

UNDEREL: Integer field indicating boundary relationships to the underlying units. Valid numbers and terms are stored in the **STRATRELS** authority table.

DEFREF: A 9-character field pointing to the reference publication in GEODX which defines the unit.

ENTRYDATE: The date the record was entered - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

LASTUPDATE: The date the record was last updated - in the standard ORACLE date format of DD-MMM-YYYY - e.g. '23-JUL-1992'.

SECTHOLENO: A 6-digit integer identifying a stratigraphic section or type section which defines the unit from the **SECTHOLES** table. Currently no type section has been defined in the **SECTHOLES** table, but in the future we are hoping make to these data available for newly defined units.

MAXTHICKNESS: A 7-digit number with up to 2 digits allowed after the decimal point for the maximum thickness of the unit.

ISCURRENT: A single-character field for a 'Y' or 'N' to indicate whether the unit is current. Within the **STRATLEX** view this field will always be 'Y'. Due to the continual updating taking place on the Australian Register of Stratigraphic Names the currency of some names may change from time to time. This could result in a STRATNO in the **ROCKS** table having no matching stratigraphic unit description in the **STRATLEX** view that we have sent you. If you have any records from the **ROCKS** table with no matching unit description in **STRATLEX** please contact us and we can then provide you with the current name of the unit.

3.26 THE STRATRELS AUTHORITY TABLE

The STRATRELS authority table is for indicating stratigraphic relationships to overlying and underlying stratigraphic units. Valid numbers and terms are:

NUMBER	NAME
1	unknown
2	not exposed
3	conformity
4	unconformity
5	disconformity
6	nonconformity
7	paraconformity
8	diastem

3.27 THE STRUCTYPES AUTHORITY TABLE

The **STRUCTYPES** authority table is the list of valid structural types and codes for the **STRUCTURES** table.

TYPE	TYPEDESC	SUBTYPE	LEGEND
0	Vector	0	drill hole/measured section vector
1	Bedding	1	Bedding (gen. dipping)
1		2	Bedding (gen. vertical)
1		3	Bedding gen. horizontal
1		4	Bedding gen. overturned
1		11	Bedding(facing definite)
1		12	Bedding vertical
1		13	Bedding horizontal
1		14	Bedding overturned
1		15	Bedding horizontal invert
1		21	Bedding (facing unknown)
1		22	Bedding unknown vertical
1		23	Bedding unknown horizontal
2	Cleavage	1	Cleavage dipping
2		2	Cleavage vertical
2		3	Cleavage horizontal
2		11	Crenulation cleavage
2		12	Crenulation cleavage vert
2		13	Crenulation cleavage hori
3	Foliation	1	Foliation dipping
3		2	Foliation vertical
3		3	Foliation horizontal
4	Igneous Layering	1	Igneous layering dipping
4		2	Igneous layering vertical
4		3	Igneous layering horizont
5	Axial Surface	1	Axial surface dipping
5		2	Axial surface vertical
5		3	Axial surface horizontal
6	Fault Plane	1	Fault dipping
6		2	Fault vertical
6		3	Fault horizontal
7	Vein	1	Vein quartz
7		2	Vein porphyry

TYPE	TYPEDESC	SUBTYPE	LEGEND
7		3	Vein dolerite
7		4	Vein granite
7		5	Vein lamprophyre
7		6	Vein pegmatite
7		7	Vein rodingite
7		8	Vein aplite
7		9	Vein microgranite
7		10	Vein syenite
8	Joint	1	Joint dipping
8		2	Joint vertical
8		3	Joint horizontal
9	Airphoto Dip	1	0-5 degree dip
9		2	5-15 degree dip
9		3	15-45 degree dip
9		4	45-90 degree dip
9		5	dip not estimated
9		6	vertical dip
9		7	horizontal dip
20	Fold	1	Fold hinge
21		1	Mineral elongation
21	Lineation	2	Stretching lineation
21		3	Intersection lineation
21		4	Crenulation lineation
21		5	Slickenside
21		6	Mullion
22	Palaeocurrent	1	Palaeocurrent
23	Boudin axis	1	Boudin axis
31	Kink band	1	Kink band
32	Shearing	1	Shearing direction
35	Mylonite fabric	1	C plane
35		2	S plane

3.28 VEGTYPES AUTHORITY TABLE

This table is the AGSO vegetation types authority table **VEGET** and is based on AUSLIG's vegetation map of Australia.

VEGID	VEGDESC
F1	Sparse open herbfield
G1	Sparse open tussock grassland
G2	Open tussock grassland
G3	Tussock grassland or sedgeland
G4	Closed tussock grassland or sedgeland
H2	Hummock grassland
L1	Low open woodland with no significant lower stratum
L1F	Low open woodland with other herbaceous plants
L1G	Low open woodland with tussock grasses
L1H	Low open woodland with hummock grasses
L1S	Low open woodland with tall shrubs
L1Z	Low open woodland with low shrubs
L2	Low woodland with no significant lower stratum
L2G	Low woodland with tussock grasses

VEGID	VEGDESC
L2H	Low woodland with hummock grasses
L2S	Low woodland with tall shrubs
L2Z	Low woodland with low shrubs
L3	Low open forest with no significant lower stratum
L3G	Low open forest with tussock grasses
L3S	Low open forest with tall shrubs
L3Z	Low open forest with low shrubs
L4	Low closed forest
M1G	Open woodland with tussock grasses
M1H	Open woodland with hummock grasses
M1L	Open woodland with low trees
M1S	Open woodland with tall shrubs
M2G	Woodland with tussock grasses
M2H	Woodland with hummock grasses
M2L	Woodland with low trees
M2S	Woodland with tall shrubs
M2Z	Woodland with low shrubs
M3	Open forest with no significant lower stratum
M3G	Open forest with tussock grasses and graminoids
M3L	Open forest with low trees
M3S	Open forest with tall shrubs
M3Z	Open forest with low shrubs
M4	Closed forest
MIX	Mix of several categories
NIL	No significant vegetation
S1G	Tall open shrubland with tussock grasses
S1H	Tall open shrubland with hummock grasses
S1Z	Tall open shrubland with low shrubs
S2F	Tall shrubland with other herbaceous plants
S2G	Tall shrubland with tussock grasses
S2H	Tall shrubland with hummock grasses
S2Z	Tall shrubland with low shrubs
S3G	Open scrub with tussock grasses or graminoids
S3H	Open scrub with hummock grasses
S3Z	Open scrub with low shrubs
T3L	Tall open forest with low trees
T3M	Tall open forest with medium trees
T3S	Tall open forest with tall shrubs
T4	Tall closed forest
Z1	Low open shrubland with no significant lower stratum
Z1F	Low open shrubland with other herbaceous plants
Z1G	Low open shrubland with tussock grasses
Z1H	Low open shrubland with hummock grasses
Z2	Low shrubland with no significant lower stratum
Z2F	Low shrubland with other herbaceous plants
Z2G	Low shrubland with tussock grasses and graminoids
Z3	Open heath
Z3G	Open heath with tussock grasses
Z4	Closed heath

Data Dictionary

Section 4—Data Dictionary

The data dictionary descriptions are divided into OZROX and OZCHRON components. Within these components, the tables are identified as either main data tables or authority tables, and each section is listed alphabetically.

4.1 OZROX TABLES

4.1.1 Main Tables

4.1.1.1 INTERIZONS table data dictionary

INTERIZONS is the table of interval descriptions for measured sections or drill holes.

```
Columns
   IZ_NO              NUMBER(6)      NOT NULL
   SECTHOLENO         NUMBER(5)      NOT NULL
   RECTYPE            VARCHAR2(3)    NOT NULL
   D1                 NUMBER(6,2)    NOT NULL
   D2                 NUMBER(6,2)
   PERCENT            NUMBER(7,2)
   DETAIL_PTR         NUMBER(7)
   DETAIL_PTR_CHR     VARCHAR2(7)
   DETAIL_PTR_CHR2    VARCHAR2(7)
   COMMENTS           VARCHAR2(128)
   ENTEREDBY          VARCHAR2(8)    NOT NULL
   ENTRYDATE          DATE           NOT NULL
   LASTUPDATE         DATE

Primary Key
   IZ_NO

Indexes
   IZPOINTER1      NONUNIQUE     DETAIL_PTR
   IZENTEREDBY     NONUNIQUE     ENTEREDBY
   IZSECTHOLENOS   NONUNIQUE     SECTHOLENO
   IZRECTYPES      NONUNIQUE     RECTYPE
   IZPOINTER2      NONUNIQUE     DETAIL_PTR_CHR
   IZPOINTER3      NONUNIQUE     DETAIL_PTR_CHR2

Foreign Keys
    SECTHOLENO REFERENCES NGMA.SECTHOLES (SECTHOLENO)
    RECTYPE REFERENCES NGMA.IZ_RECTYPES (RECTYPE)

Check Constraints
    CK_INTERIZONS_D1 (D1 BETWEEN 0.0 AND 99999.9 )
    CK_INTERIZONS_D2 (D2 BETWEEN 0.0 AND 99999.9 )
```

4.1.1.2 LITHDATA table data dictionary

LITHDATA is the extendable lithological attributes table for the **ROCKS** table.

```
Columns
   ROCKNO          NUMBER(6)      NOT NULL
   DATATYPE        VARCHAR2(4)    NOT NULL
   SUBTYPE         VARCHAR2(4)
   DESCRIPTION     VARCHAR2(128)
   ENTEREDBY       VARCHAR2(16)   NOT NULL
   ENTRYDATE       DATE           NOT NULL
   LASTUPDATE      DATE

Primary Key
   <none>

Indexes
```

```
   LDROCKNO        NONUNIQUE     ROCKNO

Foreign Keys

Check Constraints
```

4.1.1.3OUTCROPS table data dictionary

The **OUTCROPS** table is for outcrop-scale data.

```
Columns
   ORIGNO          NUMBER(5)      NOT NULL
   SITEID          VARCHAR2(16)   NOT NULL
   ROCKRELS        VARCHAR2(128)
   SKETCH          VARCHAR2(64)
   PHOTO           VARCHAR2(64)
   VEGCODE         VARCHAR2(5)
   VEGETATION      VARCHAR2(64)
   LANDCODE        VARCHAR2(4)
   LANDFORM        VARCHAR2(64)
   ENTEREDBY       VARCHAR2(16)   NOT NULL
   ENTRYDATE       DATE           NOT NULL
   LASTUPDATE      DATE
   STD_ID          VARCHAR2(7)
   SITENO          NUMBER(7)

Primary Key
   ORIGNO, SITEID

Indexes
   OCUSERS       NONUNIQUE        ENTEREDBY

Foreign Keys
    ORIGNO, SITEID REFERENCES NGMA.SITES (ORIGNO, SITEID)
    ORIGNO REFERENCES NGMA.ORIGINATORS (ORIGNO)
    LANDCODE REFERENCES RTMAP.LANDF (L_CODE)
    VEGCODE REFERENCES QUATDB.VEGET (VEGID)

Check Constraints
```

4.1.1.4 ROCKS table data dictionary

The **ROCKS** table is for data on stratigraphy and lithology for individual samples.

```
Columns
   ROCKNO          NUMBER(6)      NOT NULL
   ORIGNO          NUMBER(5)      NOT NULL
   SITEID          VARCHAR2(16)   NOT NULL
   SAMPLEID        VARCHAR2(16)
   ROCKTYPE        NUMBER(2)
   QUALIFIER       VARCHAR2(20)
   LITHNAME        VARCHAR2(32)
   GROUPING        VARCHAR2(50)
   STRATNO         NUMBER(5)
   STRATHEIGHT     NUMBER(8,3)
   HOLEDEPTH       NUMBER(10,2)
   DESCRIPTION     VARCHAR2(64)
   OTHERINFO       VARCHAR2(64)
   ENTEREDBY       VARCHAR2(16)   NOT NULL
   ENTRYDATE       DATE           NOT NULL
   AGE             VARCHAR2(54)
   INFORMAL        VARCHAR2(64)
   HOLEDEPTH2      NUMBER(10,2)
   SECTHOLENO      NUMBER(5)
   GEOLPROVNO      NUMBER(3)
   QUALIFIER2      VARCHAR2(20)
   QUALIFIER3      VARCHAR2(20)
   MODEOCC         VARCHAR2(4)
   LASTUPDATE      DATE
   MAP_SYMBOL      VARCHAR2(8)
```



```
   SITENO          NUMBER(7)

Primary Key
   ROCKNO

Indexes
   ROCKSORIGNO          NONUNIQUE     ORIGNO
   ROCKSTRATNO          NONUNIQUE     STRATNO
   ROCKORIGSAMP         NONUNIQUE     ORIGNO, SAMPLEID
   ROCKORIGSITE         NONUNIQUE     ORIGNO, SITEID
   ROCKSGEOLPROVNO      NONUNIQUE     GEOLPROVNO
   ROCKSITE             NONUNIQUE     SITEID
   ROCKSMAPSYMBOLS      NONUNIQUE     MAP_SYMBOL
   ROCKUSER             NONUNIQUE     ENTEREDBY

Foreign Keys
    ROCKTYPE REFERENCES NGMA.ROCKTYPES (ROCKNO)
    ORIGNO REFERENCES NGMA.ORIGINATORS (ORIGNO)
    GEOLPROVNO REFERENCES STRATA.GEOPROVS (PROVNO)

Check Constraints
    CK_ROCKS_MAPSYMBOL (not(map_symbol is not null and geolprovno is null))
    CK_ROCKS_UNIT ( not (map_symbol is not null and stratno is not null)
```

4.1.1.5 SECTHOLES table data dictionary

SECTHOLES is a table of header information for measured sections and drill holes.

```
Columns
   SECTHOLENO    NUMBER(5)      NOT NULL
   ORIGNO        NUMBER(3)      NOT NULL
   SITEID        VARCHAR2(16)   NOT NULL
   SECTYPE       VARCHAR2(1)
   TYPESEC       VARCHAR2(1)    NOT NULL
   PEDIN_UNO     VARCHAR2(8)
   DH_COMPANY    VARCHAR2(48)
   DH_ID         VARCHAR2(48)
   AV_AZIMUTH    NUMBER(3)
   AV_INCLIN     NUMBER(2)
   TOT_METRES    NUMBER(6,2)
   BEDPERP       VARCHAR2(1)    NOT NULL
   REFID         VARCHAR2(9)
   ENTEREDBY     VARCHAR2(8)    NOT NULL
   ENTRYDATE     DATE           NOT NULL
   UPORDOWN      VARCHAR2(1)    DEFAULT '?'      NOT NULL
   LASTUPDATE    DATE
   SITENO        NUMBER(7)

Primary Key
   SECTHOLENO

Indexes
   SHORIGSITES      NONUNIQUE     ORIGNO, SITEID
   SHSECTYPES       NONUNIQUE     SECTYPE
   SHENTEREDBY      NONUNIQUE     ENTEREDBY
   SHTYPESEC        NONUNIQUE     TYPESEC

Foreign Keys
    ORIGNO, SITEID REFERENCES NGMA.SITES (ORIGNO, SITEID)
    SECTYPE REFERENCES NGMA.SECTYPES (FLAG)
    ORIGNO REFERENCES NGMA.ORIGINATORS (ORIGNO)

Check Constraints
    CK_SECTHOLES_AV_AZIMUTH (AV_AZIMUTH BETWEEN 0 AND 359 )
    CK_SECTHOLES_AV_INCLIN (AV_INCLIN BETWEEN -90 AND 90 )
    CK_SECTHOLES_BEDPERP (BEDPERP IN ('N','Y') )
    CK_SECTHOLES_TYPESEC (TYPESEC IN ('O','R','T') )
    CK_SECTHOLES_UPORDOWN (UPORDOWN IN ('U','D','?') )
```

4.1.1.6 SITES table data dictionary

The **SITES** table is for location data for each sample site.

```
Columns
   ORIGNO            NUMBER(5)      NOT NULL
   SITEID            VARCHAR2(16)   NOT NULL
   FIELDID           VARCHAR2(16)
   OBSDATE           DATE
   OBSTIME           NUMBER(4,2)
   COUNTRYID         VARCHAR2(3)    NOT NULL
   STATE             VARCHAR2(3)
   REGNO             NUMBER(5)
   GEOGAREA          VARCHAR2(64)
   LOCDESC           VARCHAR2(64)
   HMAPNO            NUMBER(4)
   QMAPID            VARCHAR2(6)
   EASTING           NUMBER(8,2)
   NORTHING          NUMBER(9,2)
   ACCURACY          NUMBER(5)      NOT NULL
   HEIGHT            NUMBER(5)
   HEIGHTACC         NUMBER(3)
   DLAT              NUMBER(8,6)
   NS                VARCHAR2(1)
   DLONG             NUMBER(9,6)
   EW                VARCHAR2(1)
   METHOD            NUMBER(3)      NOT NULL
   BIBREF            VARCHAR2(9)
   AIRPHOTO          VARCHAR2(36)
   OC                VARCHAR2(1)
   SH                VARCHAR2(1)
   RO                VARCHAR2(1)
   ST                VARCHAR2(1)
   PE                VARCHAR2(1)
   RC                VARCHAR2(1)
   OZ                VARCHAR2(1)
   OM                VARCHAR2(1)
   SC                VARCHAR2(1)
   RT                VARCHAR2(1)
   RP                VARCHAR2(1)
   SP                VARCHAR2(1)
   ENTEREDBY         VARCHAR2(8)    NOT NULL
   ENTRYDATE         DATE           NOT NULL
   LASTUPDATE        DATE
   SITENO            NUMBER(7)
   RS                VARCHAR2(1)
   DATUM             VARCHAR2(8)    NOT NULL
   ENTERED_COORDS    VARCHAR2(1)

Primary Key
   ORIGNO, SITEID

Indexes
   SITESQMAPS          NONUNIQUE    QMAPID
   SITESDLATS          NONUNIQUE    DLAT
   SITESDLONGS         NONUNIQUE    DLONG
   SITESUSERS          NONUNIQUE    ENTEREDBY
   SITESHMAPS          NONUNIQUE    HMAPNO
   SITESREGIONS        NONUNIQUE    REGNO
   SITESRTMAP          NONUNIQUE    RT
   UK_SITES_SITENO     UNIQUE       SITENO
   SITESID             NONUNIQUE    SITEID
   SITESOZMIN          NONUNIQUE    OM
   SITESRP             NONUNIQUE    RP
   SITESSC             NONUNIQUE    SC
   SITESSTRUC          NONUNIQUE    ST

Foreign Keys
    ORIGNO REFERENCES NGMA.ORIGINATORS (ORIGNO)
    HMAPNO REFERENCES NGMA.HMAPS (HMAPNO)
    METHOD REFERENCES NGMA.LOCMETHODS (LOCMETHNO)
    COUNTRYID REFERENCES NGMA.AGSOCOUNTRIES (COUNTRYID)
    QMAPID REFERENCES NGMA.QMAPS (MAPNO)
    REGNO REFERENCES NGMA.GEOREGIONS (REGNO)
```

```
Check Constraints
    CK_SITES_DATUM ( datum in ('UNKNOWN', 'GDA94', 'AGD66') )
    CK_SITES_DLAT (dlat between 0 and 90 )
    CK_SITES_DLONG (dlong between 0 and 359 )
    CK_SITES_ENTERED_COORDS ( entered_coords in ('L', 'M') )
    CK_SITES_EW (ew in ('E', 'e', 'W', 'w') )
    CK_SITES_NS (ns in ('N', 'n', 'S', 's') )
    CK_SITES_RS (rs = 'X' )
```

4.1.1.7 STRUCTURES table data dictionary

STRUCTURES is the table for recording structural measurements for rock descriptions and survey data from the **INTERIZONS** table.

```
Columns
   ENTRYDATE      DATE           NOT NULL
   ENTEREDBY      VARCHAR2(8)    NOT NULL
   ORIGNO         NUMBER(5)      NOT NULL
   SITEID         VARCHAR2(16)   NOT NULL
   TYPE           NUMBER(2)      NOT NULL
   SUBTYPE        NUMBER(2)
   AZIMUTH        NUMBER(3)
   INCLINATION    NUMBER(2)
   DEFNO          NUMBER(1)
   DEFSURFNO      NUMBER(1)
   PLOTRANK       NUMBER(3)
   ROCKNO         NUMBER(6)
   STRUCNO        NUMBER(7)      NOT NULL
   LASTUPDATE     DATE
   SITENO         NUMBER(7)

Primary Key
   STRUCNO

Indexes
   STRUCTUSER       NONUNIQUE    ENTEREDBY
   STRUCTORIGSITE   NONUNIQUE    ORIGNO, SITEID
   STRUCTSITEID     NONUNIQUE    SITEID
   STRUCTROCKNO     NONUNIQUE    ROCKNO

Foreign Keys

Check Constraints
```

4.1.2 Authority Tables

4.1.2.1 AGSOAUTHS table data dictionary

The **AGSOAUTHS** table is for the authors of references recorded in the **AGSOREFS** table.

```
Columns
   REFID          VARCHAR2(9)     NOT NULL
   AUTHOR         VARCHAR2(60)    NOT NULL
   SEQUENCE       NUMBER(3)       NOT NULL
   ENTEREDBY      VARCHAR2(8)     NOT NULL

Primary Key
   REFID

Indexes

Foreign Keys

Check Constraints
```

4.1.2.2 AGSOCOUNTRIES authority table data dictionary

AGSOCOUNTRIES is the AGSO authority table for countries.

```
Columns
   COUNTRYID      VARCHAR2(3)    NOT NULL
   COUNTRYNAME    VARCHAR2(32)   NOT NULL

Primary Key
   COUNTRYID

Indexes

Foreign Keys

Check Constraints
```

4.1.2.3 AGSOMINERALS authority table data dictionary

AGSOMINERALS is the AGSO authority table of mineral names.

```
Columns
   MINABBREV      VARCHAR2(4)    NOT NULL
   MINNAME        VARCHAR2(32)   NOT NULL
   COMMON         VARCHAR2(1)
   ORE            VARCHAR2(1)
   ALTERATION     VARCHAR2(1)

Primary Key
   MINABBREV

Indexes
   BMRMINCOMM       NONUNIQUE     COMMON
   BMRMINABBS       UNIQUE        MINABBREV
   BMRMINNAME       UNIQUE        MINNAME
   AGSOMINORE       NONUNIQUE     ORE

Foreign Keys

Check Constraints
```

4.1.2.4 AGSOREFS table data dictionary

The **AGSOREFS** table is for the title and source details of references in AGSO's Bibliographic References Database.

```
Columns
   REFID          VARCHAR2(9)      NOT NULL
   OTHERID        VARCHAR2(16)
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   YEAR           VARCHAR2(40)
   TITLE          VARCHAR2(1024)
   SOURCE         VARCHAR2(1024)   NOT NULL
   VOLPART        VARCHAR2(36)
   PAGES          VARCHAR2(36)

Primary Key
   REFID

Indexes

Foreign Keys

Check Constraints
```

4.1.2.5 AGSOSTATES authority table data dictionary

AGSOSTATES is the AGSO authority table for Australian states.

```
Columns
   STATEID      VARCHAR2(3)    NOT NULL
   STATENAME    VARCHAR2(32)   NOT NULL

Primary Key
   STATEID

Indexes

Foreign Keys

Check Constraints
```

4.1.2.6 CONTACTS authority table data dictionary

CONTACTS is the AGSO authority table of geological contact types for the **INTERIZONS** table.

```
Columns
   CONTACTID      NUMBER(5)      NOT NULL
   CONTACTNAME    VARCHAR2(32)   NOT NULL

Primary Key
   CONTACTID

Indexes

Foreign Keys

Check Constraints
```

4.1.2.7 GEOPROVS authority table data dictionary

GEOPROVS is the AGSO authority table for geological provinces, subprovinces and domains.

```
Columns
   PROVNO         NUMBER(3)      NOT NULL
   PROVNAME       VARCHAR2(64)   NOT NULL
   PROVLETS       VARCHAR2(4)
   TYPE           VARCHAR2(16)
   RANK           NUMBER(1)
   STATUS         NUMBER(1)      NOT NULL
   PARENT         NUMBER(3)
   GEODX_REF      VARCHAR2(9)
   COMMENTS       VARCHAR2(64)
   USERID         VARCHAR2(16)
   LASTCHANGED    DATE
   ELON           NUMBER(5,2)
   WLON           NUMBER(5,2)
   TLAT           NUMBER(5,2)
   BLAT           NUMBER(5,2)
   COORDS         LONG RAW
   COUNTRYID      VARCHAR2(3)

Primary Key
   PROVNO

Indexes
   PROVLETTS       UNIQUE        PROVLETS
   PROVNAMES       UNIQUE        PROVNAME

Foreign Keys
```

```
Check Constraints
```

4.1.2.8 GEOREGIONS authority table data dictionary

GEOREGIONS is the AGSO authority table of geographical region names.

```
Columns
   REGNO          NUMBER(3)       NOT NULL
   PROVNO         NUMBER(3)       NOT NULL
   REGNAME        VARCHAR2(64)    NOT NULL
   REGLETS        VARCHAR2(4)     NOT NULL
   COUNTRYID      VARCHAR2(3)     NOT NULL
   COMMENTS       VARCHAR2(64)
   ENTEREDBY      VARCHAR2(8)     NOT NULL
   ENTRYDATE      DATE            NOT NULL

Primary Key
   REGNO

Indexes

Foreign Keys
    COUNTRYID REFERENCES AGSOCOUNTRIES (COUNTRYID)

Check Constraints
```

4.1.2.9 GEOTIME authority table data dictionary

GEOTIME is the AGSO authority table on geological ages.

```
Columns
   AGENO          NUMBER(4)       NOT NULL
   AGENAME        VARCHAR2(24)    NOT NULL
   SCOPE          NUMBER(2)       NOT NULL
   RANK           NUMBER(1)       NOT NULL
   STATUS         NUMBER(1)       NOT NULL
   PARENT         NUMBER(4)
   YNGBOUND       NUMBER(8,3)
   OLDBOUND       NUMBER(8,3)
   COMMENTS       VARCHAR2(64)
   GEODXID        VARCHAR2(10)
   LASTALT        DATE

Primary Key
   AGENO

Indexes
   GEOTIMEAGENOS      UNIQUE     AGENO
   GEOTIMEAGENAMES    UNIQUE     AGENAME

Foreign Keys

Check Constraints
```

4.1.2.10 HMAPS authority table data dictionary

HMAPS is the AGSO authority table for 1:100 000 Map Sheet areas.

```
Columns
   HMAPNO         NUMBER(4)       NOT NULL
   MMAPID         VARCHAR2(4)
   QMAPNO         NUMBER(2)
   HMAPNAME       VARCHAR2(22)
   N_LAT          NUMBER(3,1)
   W_LONG         NUMBER(4,1)
   MEAST          NUMBER(6)
   MNORTH         NUMBER(7)
```

```
   STATE1      VARCHAR2(3)
   STATE2      VARCHAR2(3)

Primary Key
   HMAPNO

Indexes
   HMAPNAMES       NONUNIQUE     HMAPNAME
   HMAPLATS        NONUNIQUE     N_LAT
   HMAPLONGS       NONUNIQUE     W_LONG

Foreign Keys

Check Constraints
```

4.1.2.11 IZ_RECTYPES authority table data dictionary

IZ_RECTYPES is the authority table of record types for the **INTERIZONS** table.

```
Columns
   RECTYPE         VARCHAR2(3)    NOT NULL
   RECNAME         VARCHAR2(16)   NOT NULL
   PHEADER         VARCHAR2(10)
   LHEADER         VARCHAR2(10)
   Q1HEADER        VARCHAR2(10)
   Q2HEADER        VARCHAR2(10)
   Q3HEADER        VARCHAR2(10)
   CHEADER         VARCHAR2(10)
   POINT           VARCHAR2(1)    DEFAULT 'N'
   PCT_ENABLED     VARCHAR2(1)    DEFAULT 'N'

Primary Key
   RECTYPE

Indexes

Foreign Keys

Check Constraints
```

4.1.2.12 LANDF authority table data dictionary

LANDF is the AGSO authority table which describes landform classes.

```
Columns
   L_CODE          VARCHAR2(4)    NOT NULL
   L_DESC          VARCHAR2(30)   NOT NULL
   MAP_CODE        VARCHAR2(2)
   DEFINITION      VARCHAR2(704)

Primary Key
   L_CODE

Indexes

Foreign Keys

Check Constraints
```

4.1.2.13 LITHDATATYPES authority table data dictionary

LITHDATATYPES is the AGSO authority table for extendable attributes for the **LITHDATA** table.

```
Columns
   DATATYPE    VARCHAR2(4)    NOT NULL
   TYPEDESC    VARCHAR2(32)
```

```
   SUBTYPE     VARCHAR2(4)    NOT NULL
   SUBDESC     VARCHAR2(32)

Primary Key
   DATATYPE, SUBTYPE

Indexes
   UK_LITHDATATYPES_SUBDESC    UNIQUE     DATATYPE, SUBDESC

Foreign Keys

Check Constraints
```

4.1.2.14 LITHNAMES view data dictionary

LITHNAMES is a view on the **LITHOLOGIES** and **AGSOMINERALS** tables.

```
CREATE OR REPLACE VIEW LITHNAMES (
       LITHID, QUALIFIER, LITHNAME, PARENT, ROCKTYPE)
AS (
       SELECT LITHID, QUALIFIER, LITHNAME, PARENT, ROCKTYPE
       FROM LITHOLOGIES
UNION
       SELECT MINABBREV, 'Q', MINNAME, NULL, TO_NUMBER(NULL)
       FROM AGSOMINERALS
       WHERE COMMON = 'C');
```

4.1.2.15 LITHOLOGIES authority table data dictionary

The **LITHOLOGIES** authority table contains the AGSO detailed lithological nomenclature table, including qualifiers.

```
Columns
   LITHID       VARCHAR2(4)    NOT NULL
   QUALIFIER    VARCHAR2(1)    NOT NULL
   LITHNAME     VARCHAR2(32)   NOT NULL
   PARENT       VARCHAR2(4)
   ROCKTYPE     NUMBER(2)

Primary Key
   LITHID

Indexes
   UK_LITHNAMES_LITHNAME    UNIQUE        QUALIFIER, ROCKTYPE, LITHNAME

Foreign Keys
    ROCKTYPE REFERENCES NGMA.ROCKTYPES (ROCKNO)

Check Constraints
```

4.1.2.16 LITHUNITS authority table data dictionary

LITHUNITS is the AGSO authority table for map unit symbols and definitions.

```
Columns
   MAP_SYMBOL    VARCHAR2(8)    NOT NULL
   PROVNO        NUMBER(5)      NOT NULL
   UNITNAME      VARCHAR2(128)  NOT NULL

Primary Key
   MAP_SYMBOL, PROVNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.17 LOCMETHODS authority table data dictionary

LOCMETHODS is the AGSO authority table for location methods.

```
Columns
   LOCMETHNO    NUMBER(3)      NOT NULL
   LOCMETHOD    VARCHAR2(64)   NOT NULL
   ACCURACY     NUMBER(4)

Primary Key
   LOCMETHNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.18 ORIGINATORS authority table data dictionary

ORIGINATORS is the AGSO authority table for originators.

```
Columns
   ORIGNO        NUMBER(5)      NOT NULL
   ORIGINATOR    VARCHAR2(22)   NOT NULL

Primary Key
   ORIGNO

Indexes
   ORIGINS    UNIQUE     ORIGINATOR

Foreign Keys

Check Constraints
```

4.1.2.19 PROVRANKS authority table data dictionary

PROVRANKS is the AGSO authority table for ranking provinces, subprovinces and domains in the **GEOPROVS** table.

```
Columns
   RANKNO       NUMBER(1)      NOT NULL
   RANKNAME     VARCHAR2(20)   NOT NULL

Primary Key
   RANKNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.20 QMAPS authority table data dictionary

QMAPS is the AGSO authority table for 1:250 000 map sheet areas.

```
Columns
   MAPNO        VARCHAR2(6)    NOT NULL
   MAPNAME      VARCHAR2(22)
   N_LAT        NUMBER(3,1)
   W_LONG       NUMBER(4,1)
```

```
Primary Key
   MAPNO

Indexes
   QMAPNAMES    UNIQUE       MAPNAME

Foreign Keys

Check Constraints
```

4.1.2.21 ROCKDATATYPES view data dictionary

ROCKDATATYPES is a view on the **LITHDATATYPES** and **AGSOMINERALS** tables.

```
CREATE OR REPLACE VIEW ROCKDATATYPES (
       DATATYPE, TYPEDESC, SUBTYPE, SUBDESC )
AS (
       SELECT DATATYPE, TYPEDESC, SUBTYPE, SUBDESC
       FROM NGMA.LITHDATATYPES
UNION
       SELECT 'ALTM','Alteration Mineral', MINABBREV, MINNAME
       FROM NGMA.AGSOMINERALS
       WHERE ALTERATION = 'A'
UNION
       SELECT 'MI','Mineral', MINABBREV, MINNAME
       FROM NGMA.AGSOMINERALS );
```

4.1.2.22 ROCKTYPES authority table data dictionary

ROCKTYPES is an AGSO authority table which is a broad classification of all rocks into 20 basic rock types.

```
Columns
   ROCKNO       NUMBER(5)       NOT NULL
   ROCKTYPE     VARCHAR2(64)    NOT NULL

Primary Key
   ROCKNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.23 SECTYPES authority table data dictionary

SECTYPES is the AGSO authority table of measured section types for the **SECTHOLES** table.

```
Columns
   FLAG         VARCHAR2(1)     NOT NULL
   FLAGNAME     VARCHAR2(24)    NOT NULL

Primary Key
   FLAG

Indexes

Foreign Keys

Check Constraints
```

4.1.2.24 STRATLEX authority table data dictionary

STRATLEX is AGSO's database of current Australian Stratigraphic Names.

```
Columns
   UNITNO          NUMBER(5)       NOT NULL
   UNITNAME        VARCHAR2(50)    NOT NULL
   RANK            NUMBER(1)
   STATUS          NUMBER(2)       NOT NULL
   CARD            VARCHAR2(1)     NOT NULL
   CATEGORY        NUMBER(2)       NOT NULL
   AGE1            NUMBER(4)
   AGE2            NUMBER(4)
   GEOLPROV        NUMBER(5)
   COMMENTS        VARCHAR2(255)
   TYPESTATE       VARCHAR2(3)
   PARENT          NUMBER(5)
   OVERLYING       NUMBER(5)
   OVEREL          NUMBER(3)
   UNDERLYING      NUMBER(5)
   UNDEREL         NUMBER(3)
   DEFREF          VARCHAR2(9)
   ENTRYID         VARCHAR2(8)     NOT NULL
   ENTRYDATE       DATE            NOT NULL
   UPDATEID        VARCHAR2(8)
   LASTUPDATE      DATE
   SITEID          VARCHAR2(16)
   ORIGNO          NUMBER(5)
   SECTHOLENO      NUMBER(6)
   MAXTHICKNESS    NUMBER(9)
   ISCURRENT       VARCHAR2(1)     NOT NULL


Primary Key
   UNITNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.25 STRATRANK authority table data dictionary

STRATRANK is the AGSO authority table of stratigraphic unit ranks in the **STRATLEX** table.

```
Columns
   RANKNO      NUMBER(1)       NOT NULL
   RANKNAME    VARCHAR2(16)    NOT NULL

Primary Key
   RANKNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.26 STRATRELS authority table data dictionary

STRATRELS is the AGSO authority table on stratigraphic relationships.

```
Columns
   RELNO       NUMBER(1)
   RELNAME     VARCHAR2(32)
```

```
Primary Key
   RELNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.27 STRATSTATUS authority table data dictionary

STRATSTATUS is the AGSO authority table of levels of data entry status for the units in the **STRATLEX** table.

```
Columns
   STATUSTYPE    VARCHAR2(1)    NOT NULL
   STATUS        NUMBER(2)      NOT NULL
   STATUSNAME    VARCHAR2(50)   NOT NULL

Primary Key
   STATUS, STATUSTYPE

Indexes

Foreign Keys

Check Constraints
```

4.1.2.28 STRUCTYPES authority table data dictionary

STRUCTYPES is the AGSO authority table of structural types used by the **STRUCTURES** table.

```
Columns
   TYPE          NUMBER(3)      NOT NULL
   SUBTYPE       NUMBER(2)      NOT NULL
   LEGEND        VARCHAR2(35)   NOT NULL
   ENDPT         NUMBER(6,2)
   SYMBOL        LONG
   TYPEDESC      VARCHAR2(16)
   AGSOCODE      NUMBER(5)
   AGSO_CODE     NUMBER(5)

Primary Key
   TYPE, SUBTYPE

Indexes

Foreign Keys

Check Constraints
```

4.1.2.29 TIMERANK authority table data dictionary

TIMERANK is AGSO's authority table of geological time ranks for the **GEOTIMES** table.

```
Columns
   RANKNO      NUMBER(1)      NOT NULL
   RANKNAME    VARCHAR2(16)   NOT NULL

Primary Key
   RANKNO

Indexes
```

```
Foreign Keys

Check Constraints
```

4.1.2.30 TIMESCOPE authority table data dictionary

TIMESCOPE is the AGSO authority table for the geographic scope of the geological time terms in the **GEOTIMES** table.

```
Columns
   SCOPENO      NUMBER(1)      NOT NULL
   SCOPENAME    VARCHAR2(20)   NOT NULL

Primary Key
   SCOPENO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.31 TIMESTATUS authority table data dictionary

TIMESTATUS is the AGSO authority table for the status of the geological time terms in the **GEOTIMES** table.

```
Columns
   STATUSNO      NUMBER(1)      NOT NULL
   STATUSNAME    VARCHAR2(20)   NOT NULL

Primary Key
   STATUSNO

Indexes

Foreign Keys

Check Constraints
```

4.1.2.32 VEGET authority table data dictionary

VEGET is the AGSO authority table which describes vegetation classes.

```
Columns
   VEGID      VARCHAR2(5)    NOT NULL
   VEGDESC    VARCHAR2(60)   NOT NULL

Primary Key
   VEGID

Indexes

Foreign Keys

Check Constraints
```

4.2 OZCHRON TABLES

4.2.1 Main Tables

4.2.1.1 RBSR_AGES table data dictionary

RBSR_AGES is the pooled results table for the Rb-Sr method.

```
Columns
   RECNO          NUMBER(8,2)    NOT NULL
   AGE            NUMBER(6,2)
   STD_DEVA       NUMBER(6,2)
   INIT_RATIO     NUMBER(7,6)
   STD_DEVI       NUMBER(7,6)
   COMMENTS       VARCHAR2(240)
   MSWD           NUMBER(6,2)
   RELEASED       DATE
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RESTRICTED     VARCHAR2(1)    NOT NULL

Primary Key
   RECNO

Indexes

Foreign Keys

Check Constraints
```

4.2.1.2 RB_SR table data dictionary

RB_SR is the analytical data table for the Rb-Sr method.

```
Columns
   AGE_POINTER    NUMBER(8,2)    NOT NULL
   ANALNO         NUMBER(6)      NOT NULL
   ORDERNO        NUMBER(2)
   ORIGNO         NUMBER(5)      NOT NULL
   SITEID         VARCHAR2(16)
   SAMPLEID       VARCHAR2(16)   NOT NULL
   REFID          VARCHAR2(9)
   METHODNO       NUMBER(6)
   MINERAL        VARCHAR2(16)
   RB_PPM         NUMBER(9,4)
   SR_PPM         NUMBER(9,4)
   RB87SR86       NUMBER(10,5)
   SR87SR86       NUMBER(10,5)
   COMMENTS       VARCHAR2(240)
   RELEASED       DATE
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RESTRICTED     VARCHAR2(1)    NOT NULL

Primary Key
   ANALNO

Indexes
   NEWRBSRAGEPOINTS  NONUNIQUE    AGE_POINTER
   NEWRBSRORIGSAMPS  NONUNIQUE    ORIGNO, SAMPLEID
   NEWRBSRORIGSITES  NONUNIQUE    ORIGNO, SITEID

Foreign Keys
    AGE_POINTER REFERENCES RBSR_AGES (RECNO)

Check Constraints
```


4.2.1.3 SHRIMP_AGES table data dictionary

SHRIMP_AGES is the pooled results table for the U-Pb Shrimp method.

```
Columns
   RECNO          NUMBER(6)       NOT NULL
   ORIGNO         NUMBER(5)       NOT NULL
   SITEID         VARCHAR2(16)
   SAMPLEID       VARCHAR2(16)    NOT NULL
   AGE            NUMBER(6,2)
   STD_DEVA       NUMBER(6,2)
   LI_AGE         NUMBER(6,2)
   STD_DEVI       NUMBER(6,2)
   COMMENTS       VARCHAR2(255)
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RELEASED       DATE
   RESTRICTED     VARCHAR2(1)     NOT NULL
   METHOD         NUMBER(1)
   COMMON_PB      NUMBER(1)
   AGE_USED       NUMBER(1)

Primary Key
   RECNO

Indexes
   NEWSHRIMPAGEORIGSAMPS    NONUNIQUE     ORIGNO, SAMPLEID

Foreign Keys
    METHOD REFERENCES MEAN_METHOD (METHODNO)
    AGE_USED REFERENCES AGE_USED (AGE_CODE)
    COMMON_PB REFERENCES COMMON_PB (PB_CODE)

Check Constraints
```

4.2.1.4 SHRIMP table data dictionary

SHRIMP is the analytical data table for the U-Pb shrimp method

```
Columns
   RECNO            NUMBER(6)       NOT NULL
   ANALNO           NUMBER(6)       NOT NULL
   LABNO            VARCHAR2(16)
   GRAINO           VARCHAR2(16)
   SPOTNO           VARCHAR2(16)
   ORDERNO          NUMBER(3)
   REFID            VARCHAR2(9)
   WEIGHT           NUMBER(5,3)
   U_PPM            NUMBER(7,2)
   TH_PPM           NUMBER(7,2)
   TH_OVER_U        NUMBER(6,3)
   PB204_PPB        NUMBER(9,2)
   PB206PB204       NUMBER(10,1)
   F_PCT            NUMBER(6,3)
   PB207PB206       NUMBER(7,5)
   STD_DEV1         NUMBER(6,5)
   PB208PB206       NUMBER(6,5)
   STD_DEV2         NUMBER(4,4)
   PB206U238RAD     NUMBER(6,5)
   STD_DEV3         NUMBER(6,5)
   PB207U235RAD     NUMBER(7,4)
   STD_DEV4         NUMBER(7,4)
   PB208TH232RAD    NUMBER(5,4)
   STD_DEV5         NUMBER(5,4)
   MIN76_AGE        NUMBER(4)
   STD_DEV6         NUMBER(4)
   AGE206_238       NUMBER(5)
   STD_DEV7         NUMBER(4)
```

```
   AGE207_235        NUMBER(5)
   AGE208_232        NUMBER(5)
   COMMENTS          VARCHAR2(240)
   ENTEREDBY         VARCHAR2(8)
   ENTRYDATE         DATE
   LASTUPDATE        DATE
   RELEASED          DATE
   RESTRICTED        VARCHAR2(1)    NOT NULL

Primary Key
   ANALNO

Indexes
   NEWSHRIMPRECPTRS    NONUNIQUE   RECNO

Foreign Keys

Check Constraints
```

4.2.1.5 SMND_AGES table data dictionary

SMND_AGES is the pooled results table for the Sm-Nd method

```
Columns
   RECNO          NUMBER(6)      NOT NULL
   MSWD           NUMBER(6,2)
   AGE            NUMBER(6,2)
   STD_DEVA       NUMBER(6,2)
   INIT_RATIO     NUMBER(7,6)
   STD_DEVI       NUMBER(7,6)
   EPSILON        NUMBER(4,1)
   STD_DEV2       NUMBER(3,1)
   COMMENTS       VARCHAR2(240)
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RELEASED       DATE
   RESTRICTED     VARCHAR2(1)

Primary Key
   RECNO

Indexes

Foreign Keys

Check Constraints
```

4.2.1.6 SM_ND table data dictionary

SM_ND is the analytical data table for the Sm-Nd method

```
Columns
   AGE_POINTER    NUMBER(6)      NOT NULL
   ANALNO         NUMBER(6)      NOT NULL
   ORDERNO        NUMBER(2)      NOT NULL
   ORIGNO         NUMBER(5)      NOT NULL
   SITEID         VARCHAR2(16)
   SAMPLEID       VARCHAR2(16)   NOT NULL
   GEOL_AGE       NUMBER(6,2)
   EPSN_ND        NUMBER(4,1)
   REFID          VARCHAR2(9)
   METHODNO       NUMBER(6)
   MINERAL        VARCHAR2(16)
   SM_PPM         NUMBER(8,4)
   ND_PPM         NUMBER(9,4)
   SM147ND144     NUMBER(8,5)
   ND143ND144     NUMBER(9,6)
   TND            NUMBER(4)
   COMMENTS       VARCHAR2(240)
```



```
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RELEASED       DATE
   SIGMA2X10_6    NUMBER(2)
   RESTRICTED     VARCHAR2(1)

Primary Key
   ANALNO

Indexes
   NEWSMNDAGEPOINTS    NONUNIQUE   AGE_POINTER
   NEWSMNDORIGSAMPS    NONUNIQUE   ORIGNO, SAMPLEID
   NEWSMNDORIGSITES    NONUNIQUE   ORIGNO, SITEID

Foreign Keys

Check Constraints
```

4.2.1.7 UPB_AGES table data dictionary

UPB_AGES is the analytical data table for the U-Pb whole mineral method.

```
Columns
   RECNO          NUMBER(6)      NOT NULL
   AGE            NUMBER(6,2)
   STD_DEVA       NUMBER(6,2)
   LI_AGE         NUMBER(6,2)
   STD_DEVI       NUMBER(6,2)
   COMMENTS       VARCHAR2(240)
   MSWD           NUMBER(6,2)
   RELEASED       DATE
   ENTEREDBY      VARCHAR2(8)
   ENTRYDATE      DATE
   LASTUPDATE     DATE
   RESTRICTED     VARCHAR2(1)    NOT NULL

Primary Key
   RECNO

Indexes

Foreign Keys

Check Constraints
```

4.2.1.8 U_PB table data dictionary

U_PB is the analytical data table for the U-Pb whole mineral method

```
Columns
   RECNO          NUMBER(5)      NOT NULL
   ANALNO         NUMBER(6)      NOT NULL
   ORIGNO         NUMBER(5)      NOT NULL
   SITEID         VARCHAR2(16)
   SAMPLEID       VARCHAR2(16)   NOT NULL
   ORDERNO        NUMBER(3)
   FRACTION       VARCHAR2(16)
   REFID          VARCHAR2(9)
   METHODNO       NUMBER(6)
   WEIGHT         NUMBER(6,4)
   U_PPM          NUMBER(8,2)
   PB_PPM         NUMBER(8,2)
   PBRAD_PPM      NUMBER(8,2)
   PB206PB204     NUMBER(8,2)
   PB206RAD       NUMBER(8,2)
   PB207RAD       NUMBER(8,2)
   PB208RAD       NUMBER(6,2)
   PB207PB206     NUMBER(6,5)
   PB206U238      NUMBER(6,5)
```

```
   PB207U235     NUMBER(7,5)
   MIN76_AGE     NUMBER(4)
   STD_DEV1      NUMBER(3)
   APP206_238    NUMBER(4)
   STD_DEV2      NUMBER(3)
   APP207_235    NUMBER(4)
   STD_DEV3      NUMBER(3)
   APP208_232    NUMBER(4)
   STD_DEV4      NUMBER(3)
   COMMENTS      VARCHAR2(240)
   ENTEREDBY     VARCHAR2(8)
   ENTRYDATE     DATE
   LASTUPDATE    DATE
   RELEASED      DATE
   RESTRICTED    VARCHAR2(1)    NOT NULL

Primary Key
   ANALNO

Indexes
   NEWUPBORIGSAMPS    NONUNIQUE    ORIGNO, SAMPLEID
   NEWUPBORIGSITES    NONUNIQUE    ORIGNO, SITEID
   NEWUPBRECPTRS    NONUNIQUE      RECNO

Foreign Keys
    RECNO REFERENCES UPB_AGES (RECNO)

Check Constraints
```

4.2.2 Authority Tables

4.2.2.1 AGE_USED authority table data dictionary

The **AGE_USED** authority table is for the isotope ratios that can be used for determining an age.

```
Columns
   AGE_CODE    NUMBER(1)      NOT NULL
   AGE_USED    VARCHAR2(8)    NOT NULL

Primary Key
   AGE_CODE

Indexes

Foreign Keys

Check Constraints
```

4.2.2.2 COMMON_PB authority table data dictionary

The **COMMON_PB** authority table is for the lead isotope used to correct **SHRIMP** U-Pb age determinations for non-radiogenic lead.

```
Columns
   PB_CODE      NUMBER(1)      NOT NULL
   COMMON_PB    VARCHAR2(12)   NOT NULL

Primary Key
   PB_CODE

Indexes

Foreign Keys

Check Constraints
```

4.2.2.3 MAXNOS table data dictionary

```
Columns
   IDMAXNO    VARCHAR2(16)   NOT NULL
   MAXNO      NUMBER(6)      NOT NULL

Primary Key
   MAXNO

Indexes

Foreign Keys

Check Constraints
```

4.2.2.4 MEAN_METHOD authority table data dictionary

The **MEAN_METHOD** authority table is for the methods used to calculate mean of isotope measurements for each analysis.

```
Columns
   METHODNO    NUMBER(1)      NOT NULL
   METHOD      VARCHAR2(128)  NOT NULL

Primary Key
   METHODNO

Indexes

Foreign Keys

Check Constraints
```

4.2.2.5 METHODS authority table data dictionary

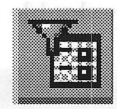
METHODS is AGSO's authority table of analytical methods.

```
Columns
   METHODNO    NUMBER(5)      NOT NULL
   METHOD      VARCHAR2(64)   NOT NULL

Primary Key
   METHODNO

Indexes

Foreign Keys

Check Constraints
```

Section 5—OZCHRON Microsoft Access Forms

Release 3 of the AGSO's geochronology dataset is available as a Microsoft Access 95 database. The database design, structure, attributes and values used in the Access version are the same as those developed for the ORACLE version as described in the earlier sections of the manual, with a few minor exceptions. The purpose of this section is to provide some general guidance in the use of the OZCHRON database in Access.

A brief description of each form in the OZCHRON Access database is included in this section accompanied by screen captures of the forms. Lookup values for a given attribute are available as dropdown menus within most forms, or can be viewed by accessing the relevant codes through the main menu. Queries on the dataset are best handled by using the filter by form query button.



5.1 OZCHRON MAIN MENU

The OZCHRON Main Menu is illustrated in Figure 5.1 and is the entry point for the various forms within the database. The 3 main authority tables for geochronology data are also directly accessible from the menu, and the user is able to access some geochronology reports.

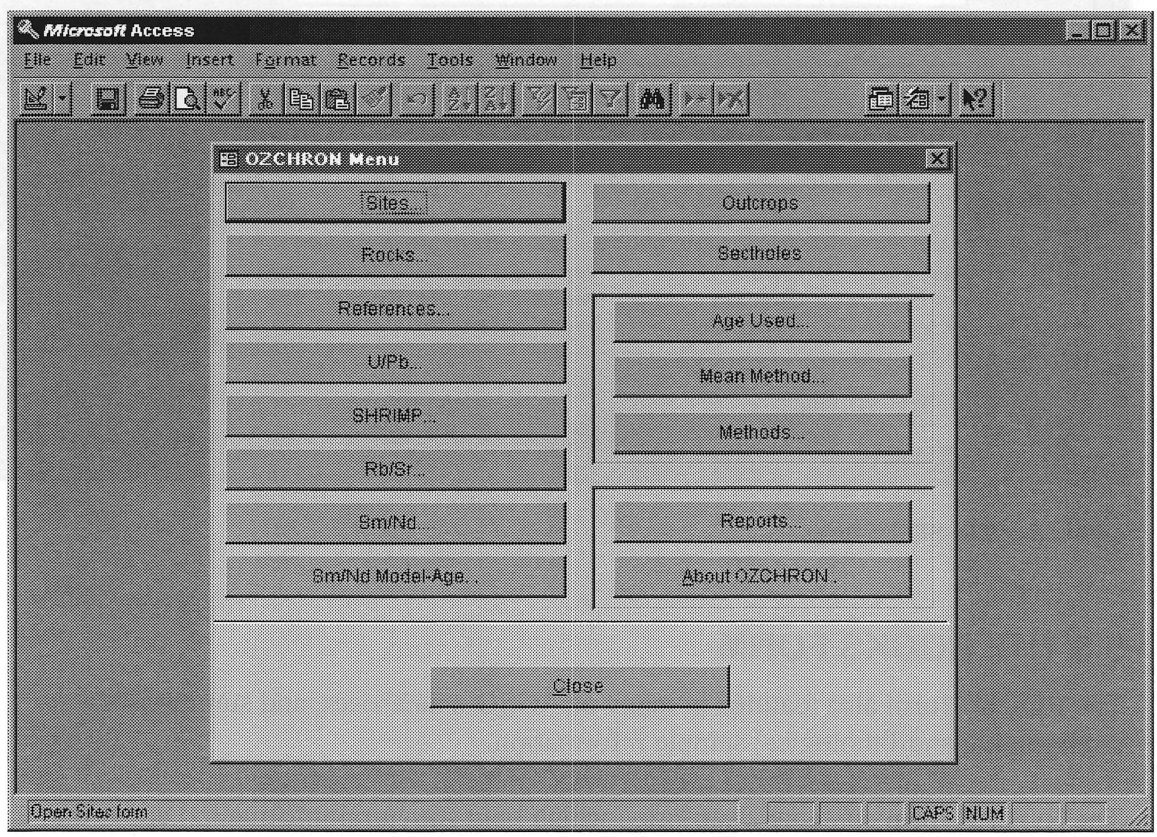


Figure 5.1 The main menu for OZCHRON.

5.2 THE SITES FORM

The standard SITES form that is a feature of most AGSO databases displays the full location information for given samples. The fields on the form are colour coded to quickly allow users to identify mandatory (yellow), optional (white), and system generated (blue) information. The form is illustrated in Figure 5.2.

Included on the form are 2 buttons. The button labelled 'Convert AMG to Lat/Long' runs a script that will convert AGD66 coordinates to latitudes and longitudes. The other button, labelled 'Lat & Long in Deg, Min and Sec' toggles the latitude and longitude fields between decimal and degrees.

There is also a section at the base of the form which indicates by an 'X' in the appropriate box where in the database system there is data relating to the SITE. To navigate to the related information, simply double click on the relevant box.

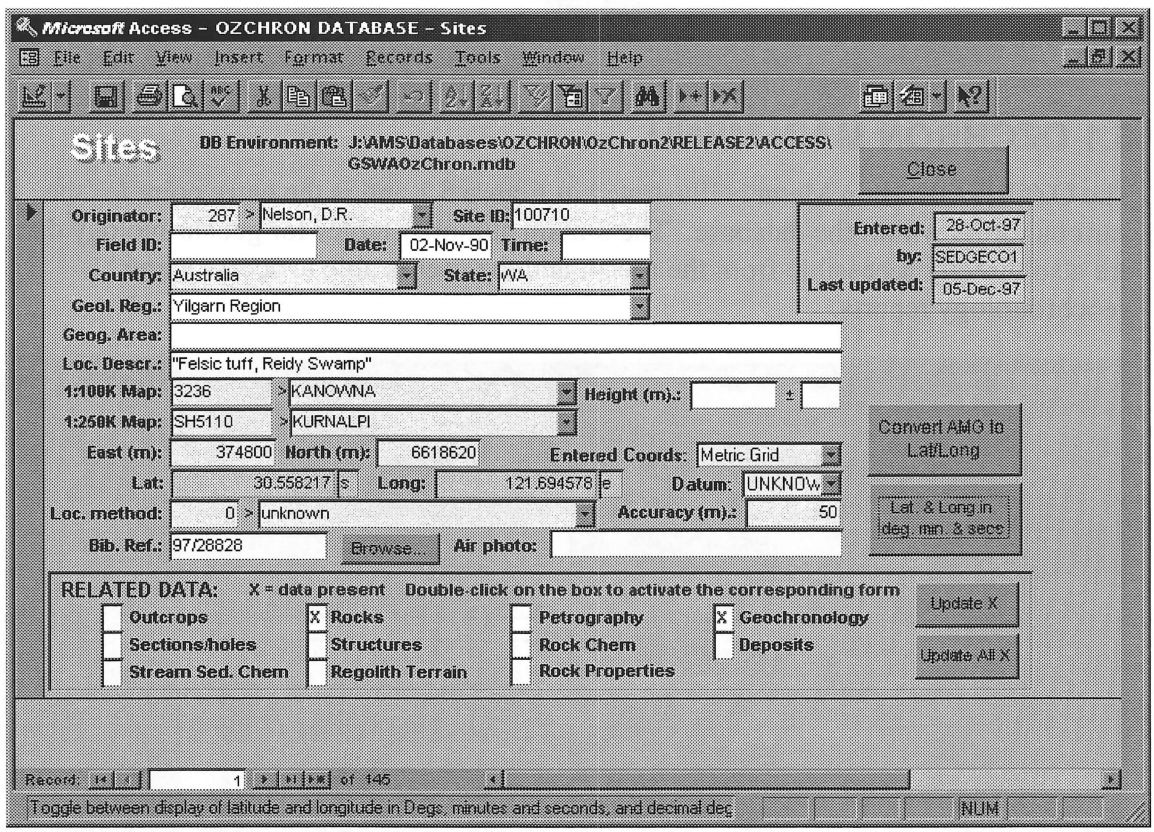


Figure 5.2 The SITES form.

5.3 THE ROCKS FORM

The ROCKS form also features in many of AGSO's databases, and summarises stratigraphic and lithological sample information.

The ROCKS form contains 2 subforms which hold structural information about the sample and lithological attributes, such as textures, grainsize, and alteration styles.

The form is illustrated in Figure 5.3.

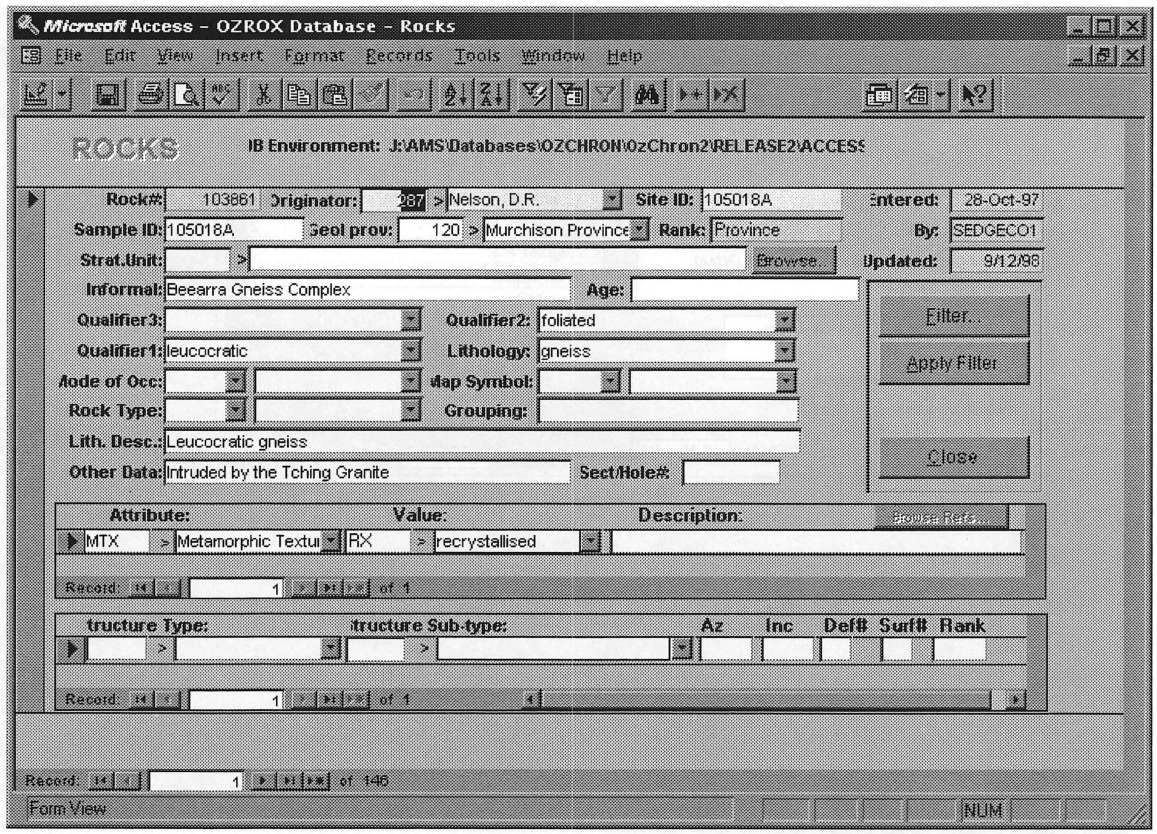


Figure 5.3 The ROCKS form.

5.4 THE REFERENCES FORM

Details in the REFERENCES form are extracted from the AGSOREFS database. The form displays the publication details for each reference, and lists the authors with a sequence number indicating whether they were first author, second author and so forth.

The form is illustrated in Figure 5.4.

5.5 THE CONVENTIONAL U-PB FORM

The CONVENTIONAL U-PB form is comprised of 2 sections. The information contained in the fields near the top of the form is based in the U-PB table, which contains the "pooled" result.

The remainder of the form is a subform, based on the UPB_AGES table, contains the analytical data for that sample. By utilising the inner set of scrollbars at the base of this section, the user can view the full set of analytical data for a given sample.

The form is illustrated in Figure 5.5.

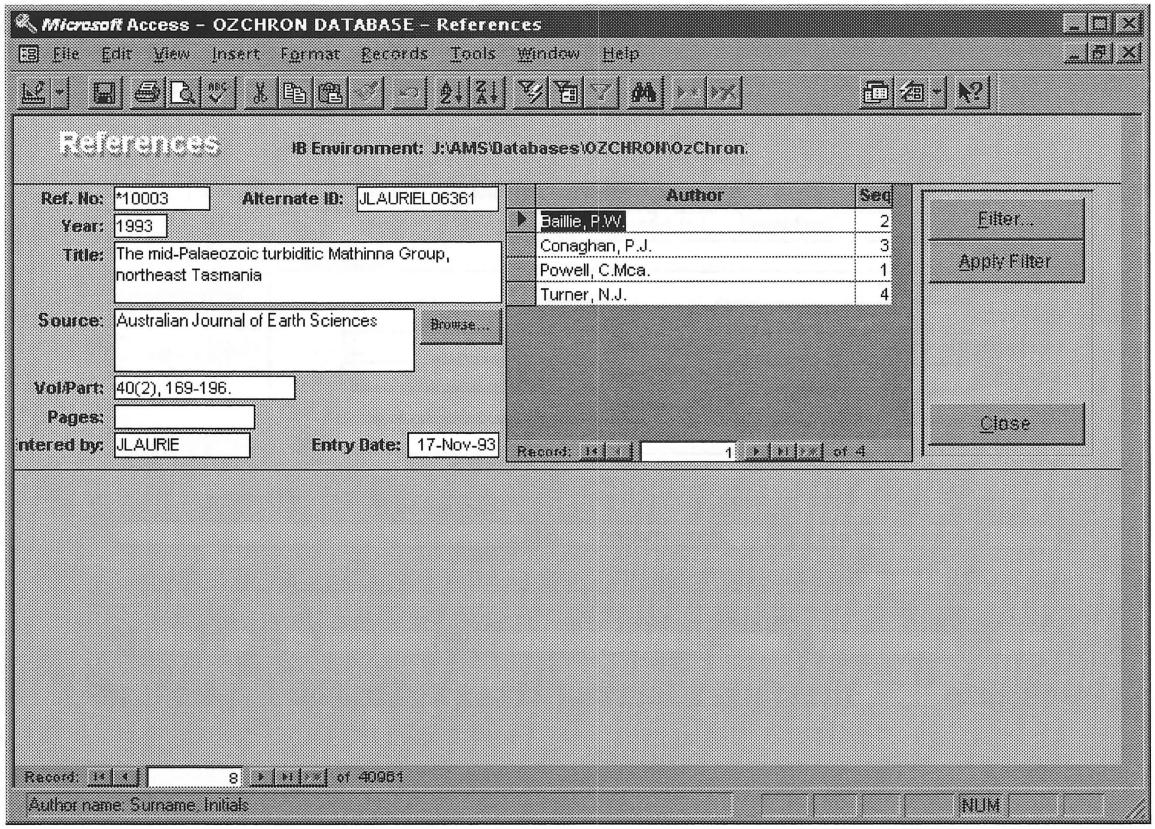


Figure 5.4 The REFERENCES form

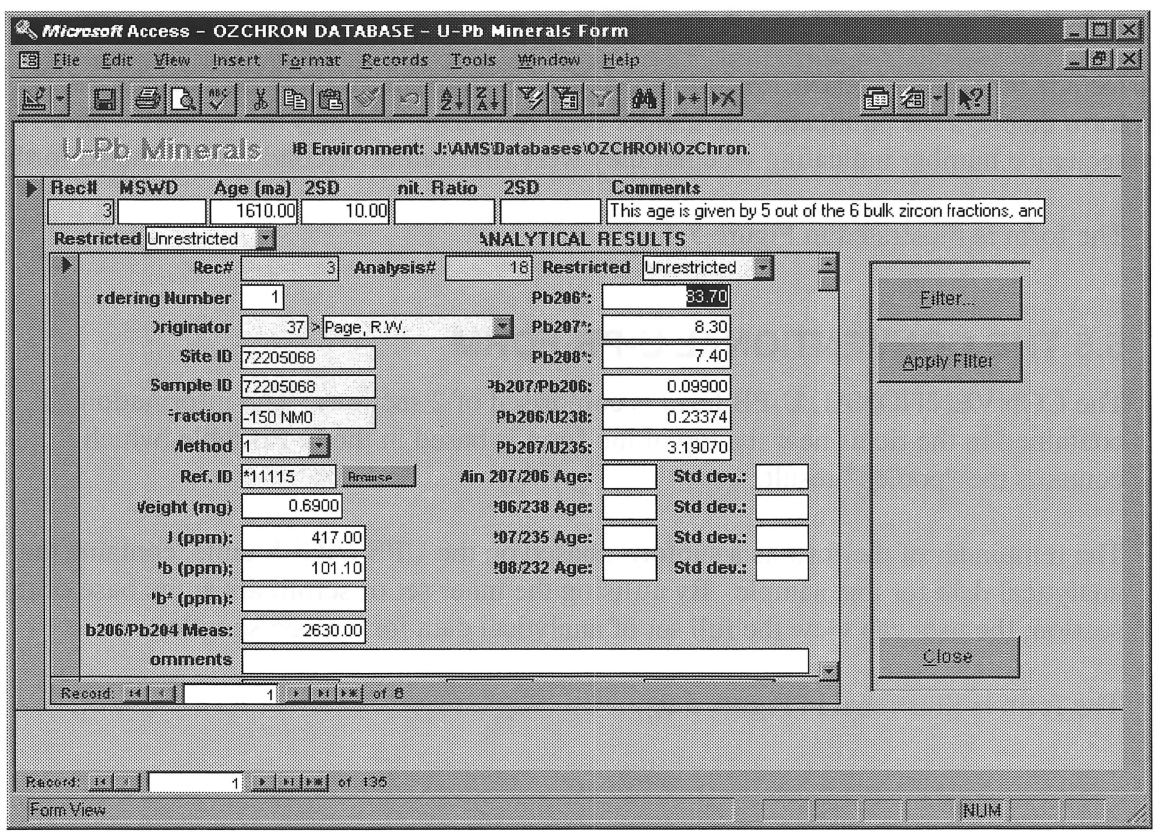


Figure 5.5 The Conventional U-PB form

5.6 THE SHRIMP FORM

The SHRIMP Form is designed in a similar manner to the CONVENTIONAL U-PB form, with 2 sections. Again the upper section contains "pooled age" information, and the lower section displays the analytical data that relates to that pooled age.

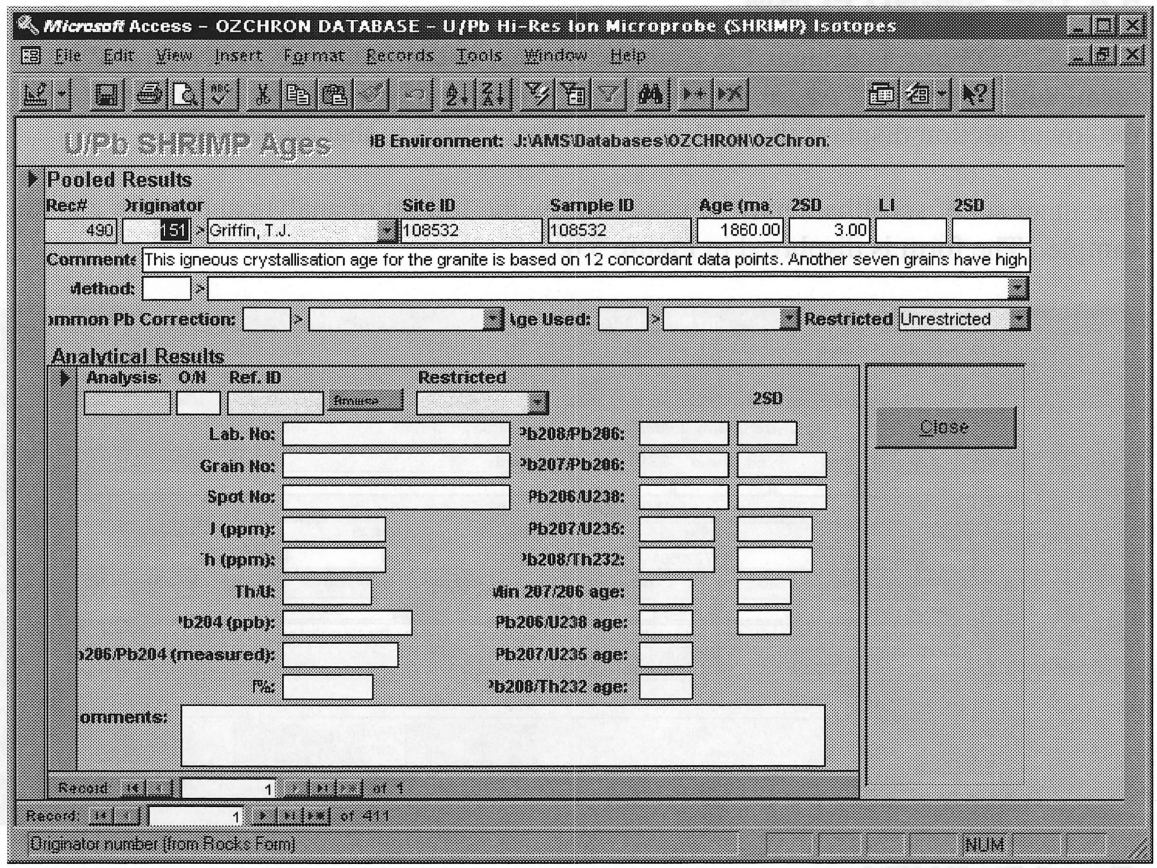


Figure 5.6 The SHRIMP form

5.7 THE RB-SR FORM

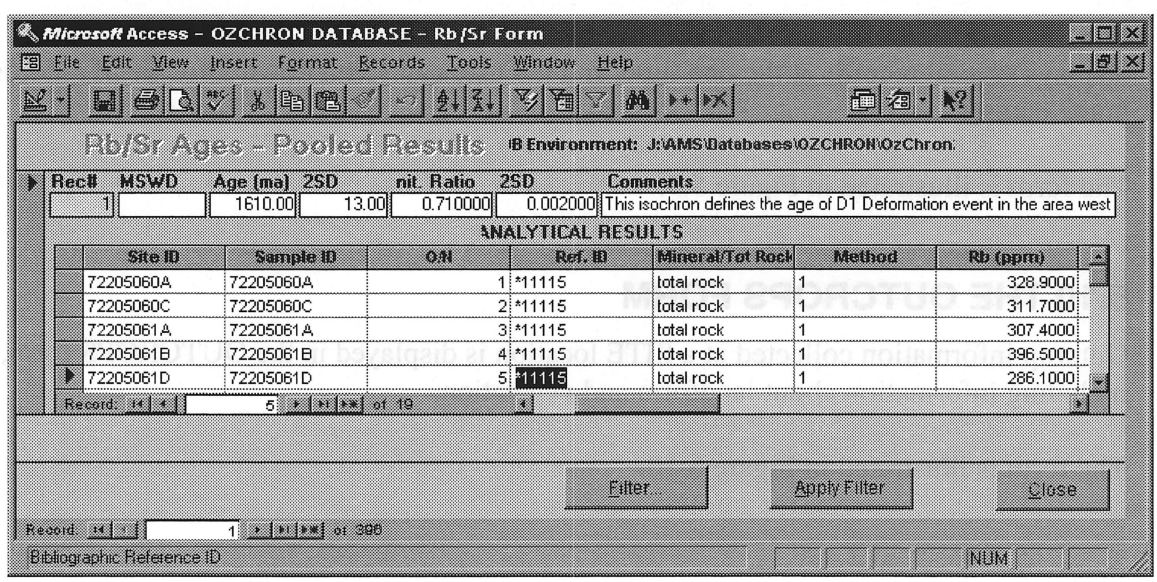


Figure 5.7 The RB-SR form

The RB-SR form, displayed in Figure 5.7, is again comprised of a pooled age section and a section that displays analytical data. The second section is displayed in tabulated form for ease of comparison of data.

5.8 THE SM-ND FORM

The SM-ND Form is designed in a similar manner to the CONVENTIONAL U-PB form, with 2 sections. Again the upper section contains "pooled age" information, and the lower section displays the analytical data that relates to that pooled age.

The inner set of scrollbars may be used to view the full set of analytical data for a given sample. The form is displayed in Figure 5.8.

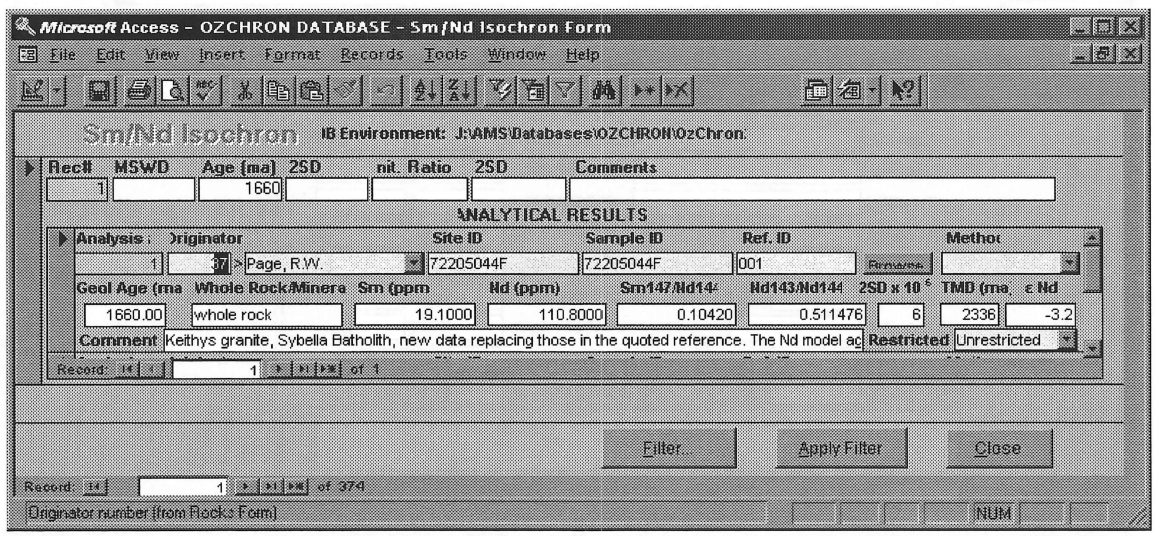


Figure 5. The SM-ND form

5.9 THE SM-ND MODEL AGE FORM

The SM-ND MODEL AGE form contains calculated Nd model age data. The form displays several records at the one time, and the user can scroll down through all records in the dataset.

The form is illustrated in Figure 5.9.

5.10 THE OUTCROPS FORM

Outcrop information collected at a SITE location is displayed in the OUTCROPS form, including information about landform and vegetation.

The form is illustrated in Figure 5.10.

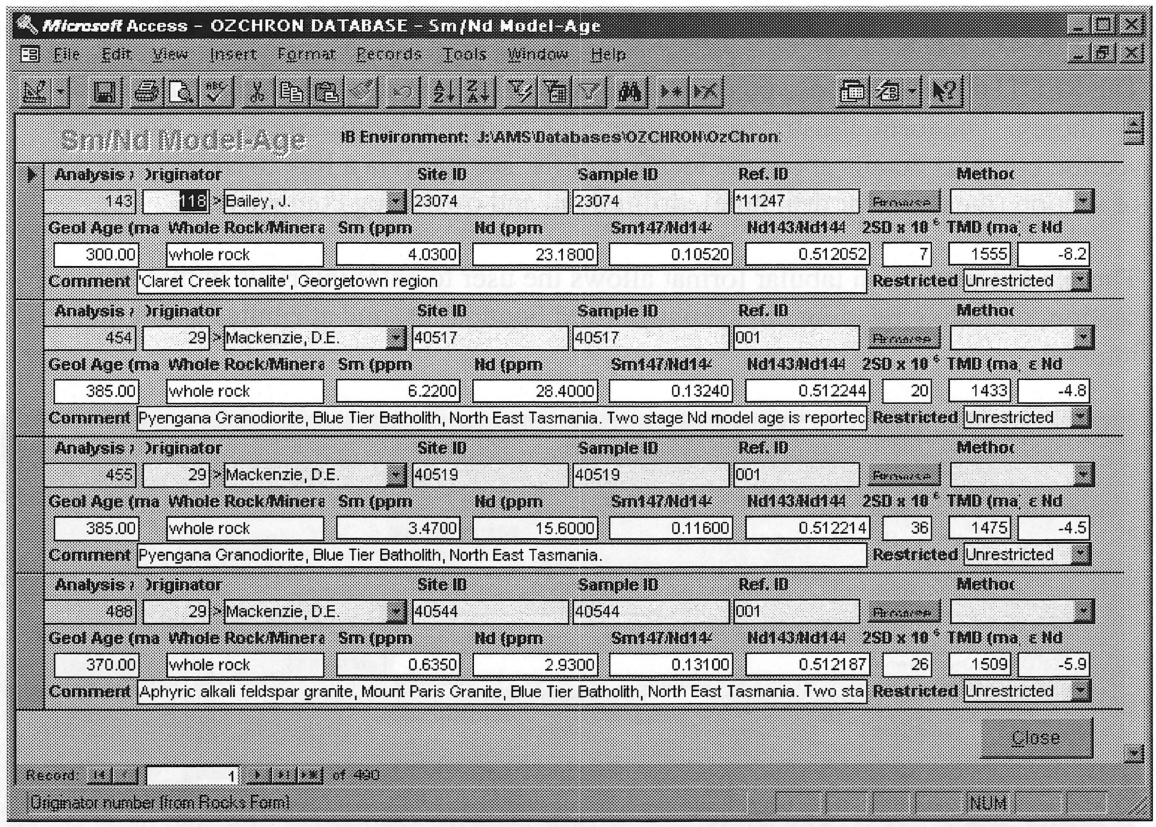


Figure 5.9 The SM-ND MODEL AGE Form

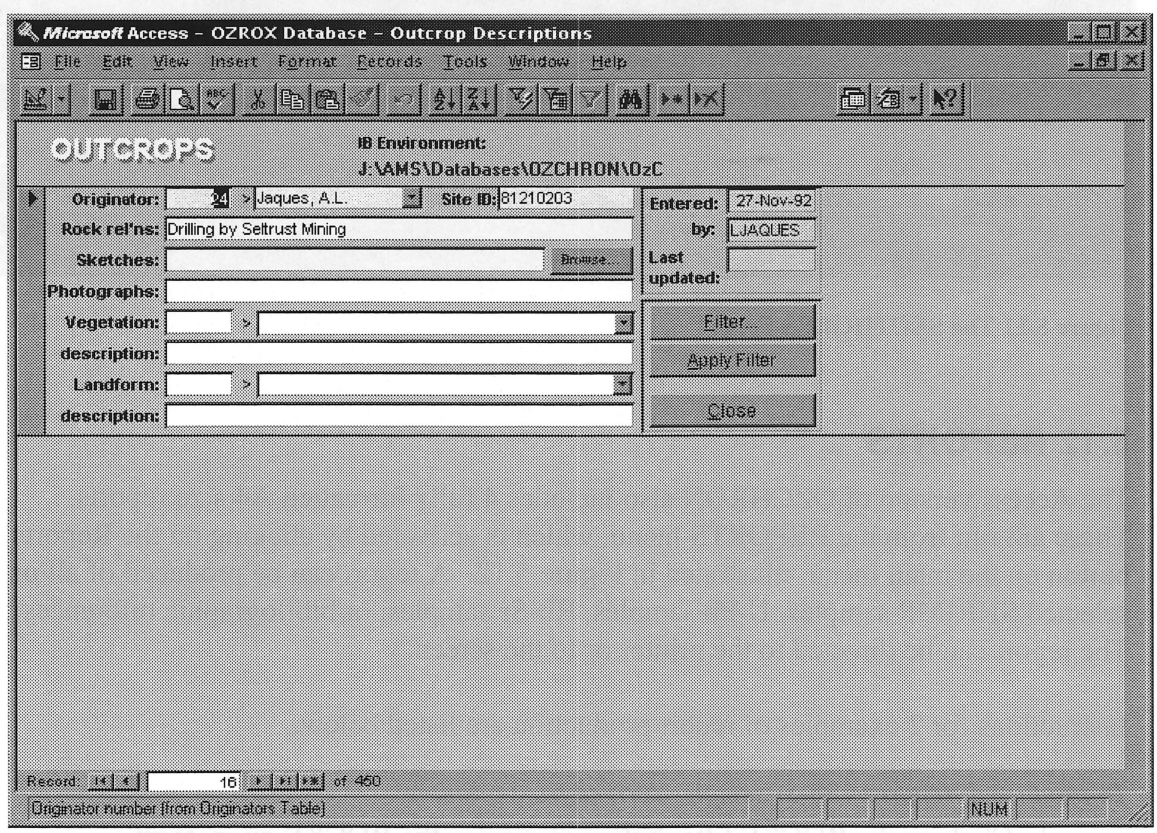


Figure 5.10 The OUTCROPS Form

5.11 THE SECTHOLES FORM

The SECTHOLES database contains information relating to measured sections and drillholes. The form, illustrated in Figure 5.11, is divided into 2 sections. The upper section contains details about the location of the section (via a link to SITES), the type of section (measured or drill hole), drillhole id and owner (eg company).

The second section, in tabular format allows the user to enter intervals within the section, including bedding units, contacts and boundaries, and attributes about that interval.

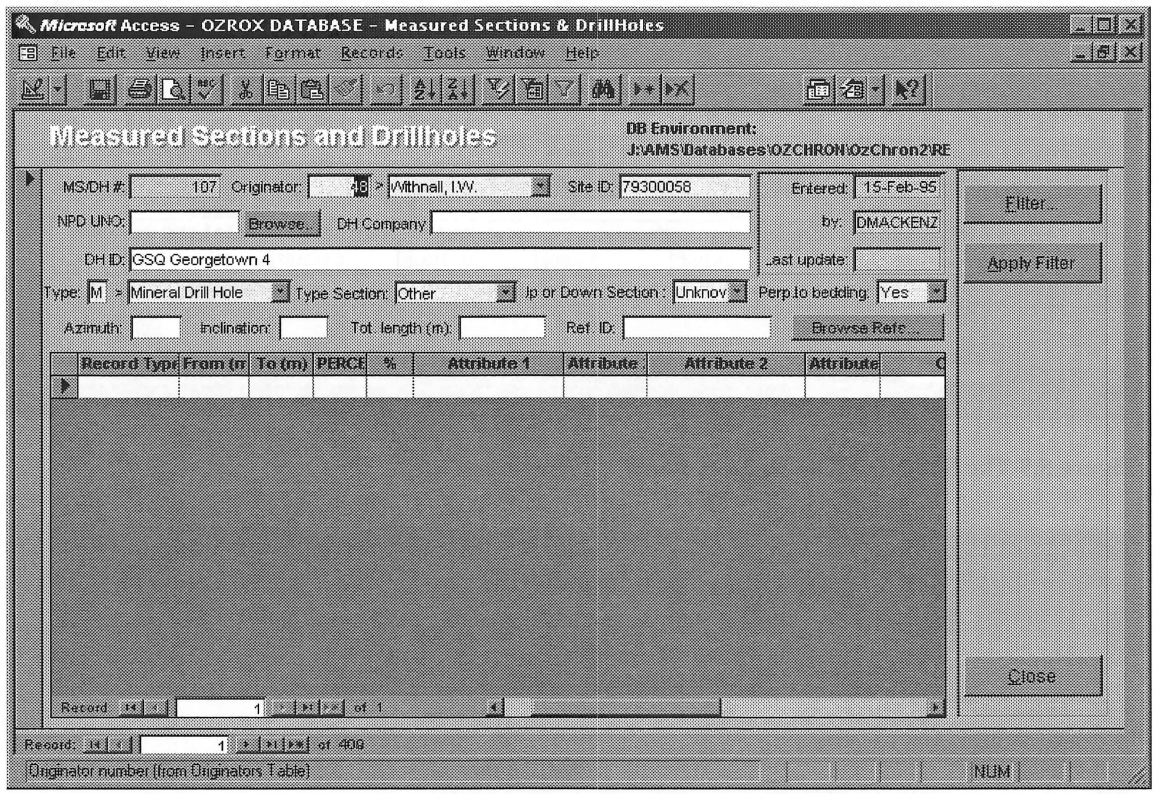


Figure 5.11 The SECTHOLES Form

5.12 REPORTS

The Access version of OZCHRON also includes 4 fully formatted A4 size reports. These are run from the REPORTS menu, which is activated by clicking on the Reports button on the main menu, illustrated in Figure 5.12. A report can be produced of all or selected SHRIMP samples, U-Pb samples, Rb-Sr samples, or bibliographic references. The report can be directed to the printer or to the screen.

Instructions for 2 examples of report production are listed below.

To produce a report of Rb-Sr samples derived from granites:

1. Click on the ROCKS filter button to display the ROCKS query form.
2. Click on Clear to clear any unwanted query parameters.
3. Go to the LITHOLOGY field and select "granite"
4. Select OK to accept query results. You will drop back to the Reports Menu.

5. In the Reports menu click on "Apply Filter". This will bring up a dialogue telling the user how many records have been selected to this point.
6. When this process has been completed, click on the RB-SR Report button to display the results of your query in print preview mode.
7. You can now either choose to print your report or return to the Reports menu and redefine the filter.

To produce a report of SHRIMP samples from NSW:

1. Click on the SITES filter button to display the SITES form.
2. Click on Clear to clear any unwanted query parameters.
3. Go to the STATE field and select "NSW".
4. Select OK to accept query results.. You will drop back to the Reports Menu.
5. In the Reports menu click on "Apply Filter". This will bring up a dialogue telling the user how many records have been selected to this point.
6. When this process has been completed, click on the SHRIMP Report button to display the results of your query in print preview mode.
7. You can now either choose to print your report or return to the Reports menu and redefine the filter.

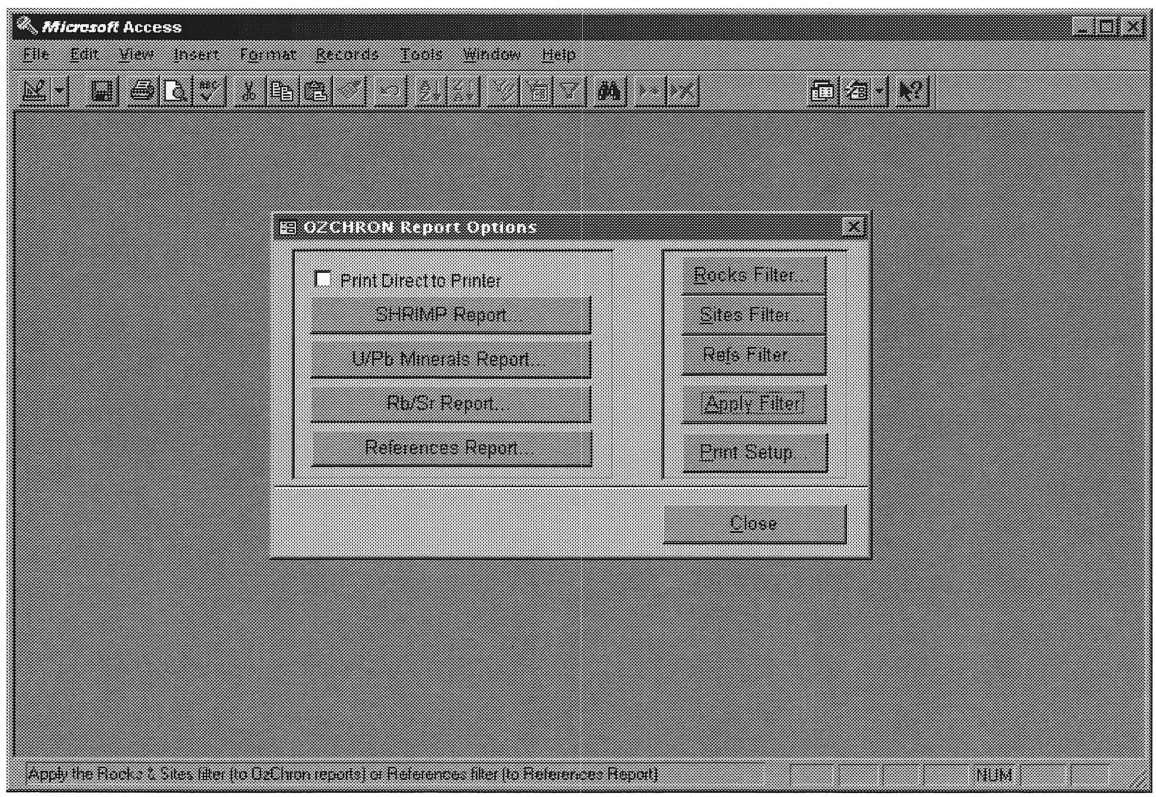


Figure 5.12 The Reports Menu

Section 6—OZCHRON99 Data Set

This OZCHRON release contains geochronological data derived from different isotopic systems from Australian Archaean, Proterozoic and Palaeozoic provinces. This data lists 1317 age determinations. The third release contains 221 new SHRIMP (ion microprobe) U-Pb ages and 138 Samarium- Neodymium ages. The new release adds to the 395 Rb-Sr ages, 135 U-Pb conventional ages, 376 Samarium- Neodymium ages and 411 SHRIMP U-Pb ages previously released in Version 2 of OZCHRON. Table 6.1 lists all the ages by province. Figures 6.1, 6.2, 6.3 and 6.4 show the distribution of sites at which the samples for these age determinations have been collected.

The data base, as it has been developed so far, has not endeavoured to cover all analytical techniques. This new data set principally contains additional U-Pb results by SHRIMP ion probe methods, and Sm - Nd data.

All of the reported conventional U-Pb and Rb-Sr results define Proterozoic ages, but it is now recognised that most Rb-Sr ages in early to middle Proterozoic terranes reflect metamorphic overprinting or alteration. However in some cases they may very relevant to dating metamorphism and alteration events.

All results are normalised to decay constants recommended by the IUGS Subcommission on Geochronology (Steiger and Jäger, 1977; Subcommission on Geochronology: Convention on the use of decay constants in geo- and cosmology. Earth and Planetary Science Letters, 36: 359-362).

DATASET	PROVINCE	SHRIMP	SM/ND	RB/SR	U/PB
Arunta Block	Arunta Block	31	73	38	13
Broken Hill Block	Broken Hill	5	6		3
	Willyama Block			10	7
Lachlan Fold Belt	Dundas Trough	18			
	Lachlan Fold Belt	88	65		
	Rocky Cape Block	13			
	Tyenna Block	8			
McArthur Basin	Arnhem Block	5		1	
	McArthur Basin	47		7	3
	Murphy Inlier			1	
	South Nicholson Basin	1		1	
Mt Isa Inlier	Mt Isa Inlier	109	38	74	48
Musgrave Block	Musgrave Block	11	62	19	
New England Fold Belt	New England Fold Belt	1			
North Queensland	Cape York Plutonic Belt	14	34	1	
	Carpentaria Basin	1	1		
	Coen Block	12	18		
	Drummond Basin	2	2		
	Georgetown Block	35	19	40	6
	Nth Queensland Igneous Province	18	45		
	Yambo Block	5	6		
Northern Territory Proterozoic	Litchfield Batholith			2	2
Pilbara	Pilbara Block		44		
Pine Creek Geosyncline	Pine Creek Geosyncline	34	1	48	23
South Australian Proterozoic	Adelaide Basin			1	
	Curnamona Craton				1
	Denison Block			3	1
	Gawler Craton			79	9
	Stuart Shelf			8	7
Sydney Basin	Sydney Basin	3			
Tennant Creek Block	Birrindudu Basin			1	
	Davenport Geosyncline	9		1	2
	Tennant Creek Block	28	5	22	4
Western Australian Proterozoic	Albany-Fraser Province	6	6	10	3
	Bangemall Basin	1		1	
	Fitzroy Lamproites		25		
	Gascoyne Block			6	
	Granites-Tanami Block	12	17	5	
	Halls Creek Province	54	47	5	3
	Kimberley Basin	2		2	
	Northhampton Block			2	
	Paterson Province			6	
Yilgarn Craton	Eastern Goldfields Province	35			
	Murchison Province	3			
	Southern Cross Province	1			
	Yilgarn Craton	20			
	Houghton Inlier			1	
Totals		**632**	**514**	**395**	**135**

Table 6.1 List of samples from Australian geological provinces in OZCHRON.

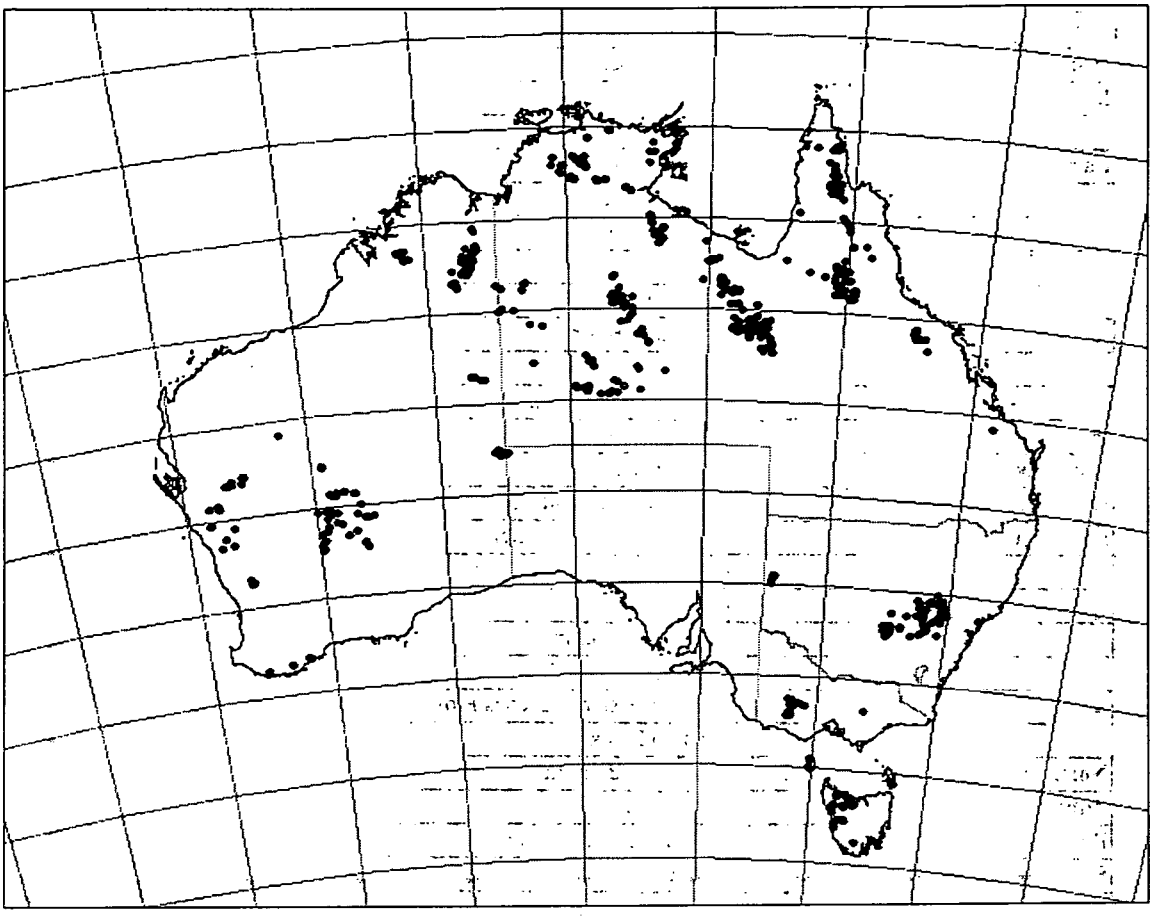


Figure 6.1 Distribution of the Australian SHRIMP dataset

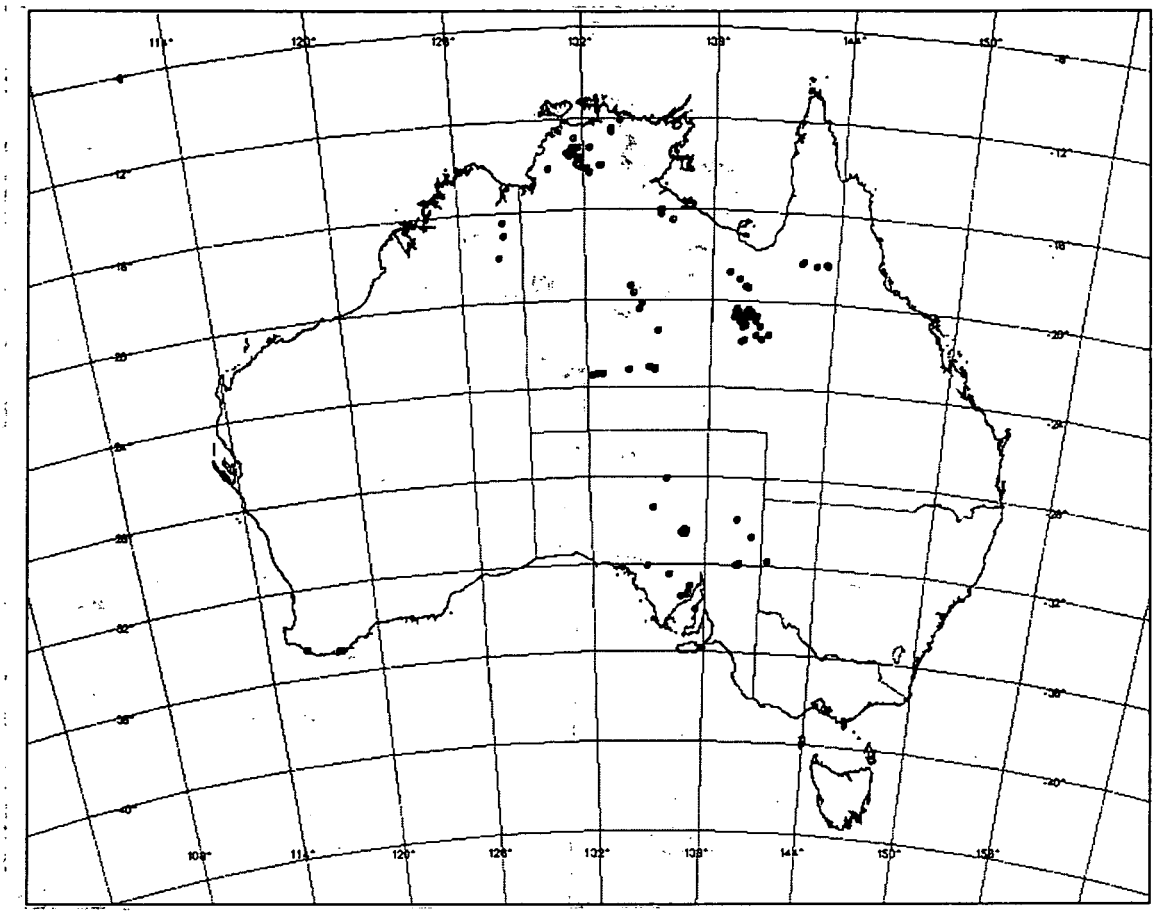


Figure 6.2 Distribution of the Australian U/Pb dataset

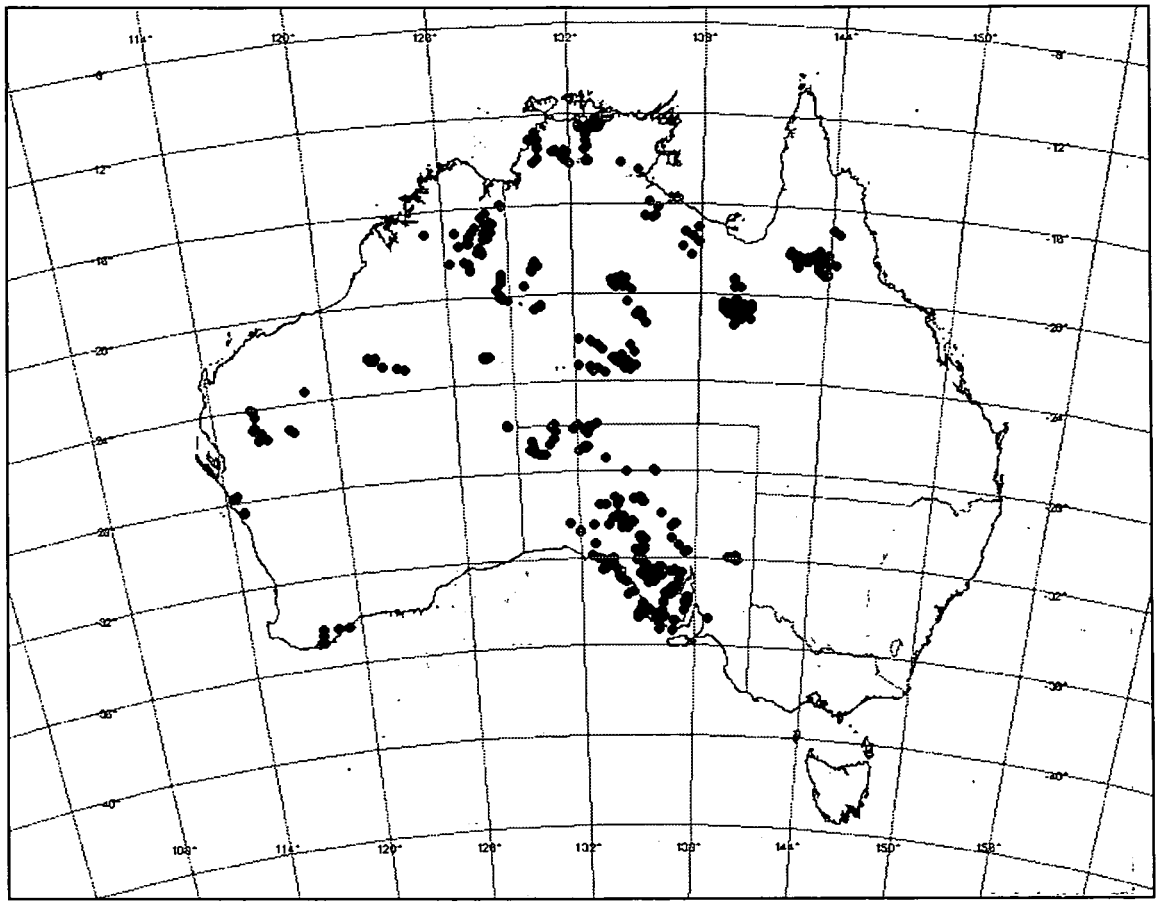


Figure 6.3 Distribution of the Australian Rb/Sr dataset

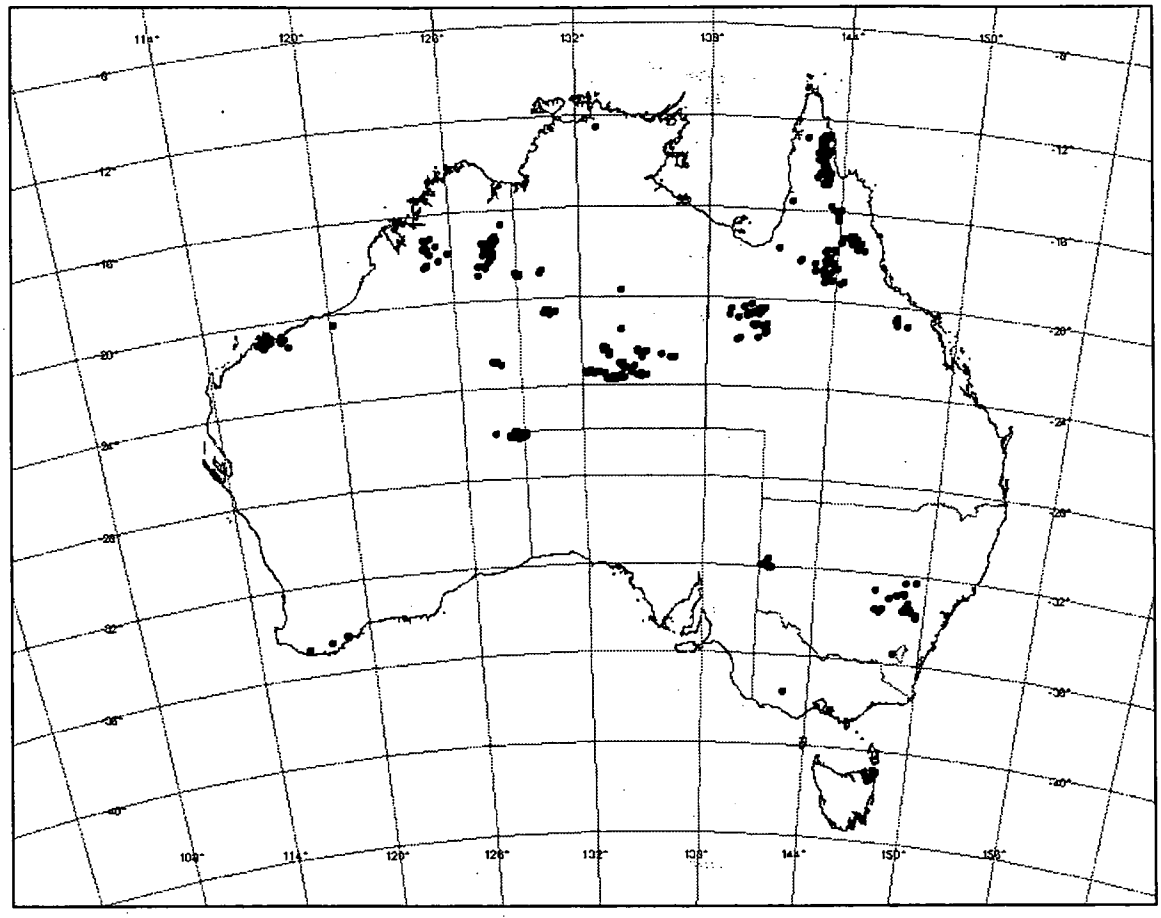


Figure 6.4 Distribution of the Australian Sm/Nd dataset