AGSO

GUIDE TO THE AUSTRALIAN STRATIGRAPHIC NAMES DATABASE

BY

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AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

DEPARTMENT OF PRIMARY INDUSTRIES AND ENERGY

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ABSTRACT

The Australian Stratigraphic Names Database is the national authority on stratigraphic names in Australia. It is maintained by the Stratigraphic Index Section of the Australian Geological Survey Organisation for the Stratigraphic Names Committee of the Geological Society of Australia. It has developed from a card index in the late 1940s to a publicly accessible relational database, available on the World Wide Web, in the mid-1990s.

The database stores information on the usage of stratigraphic names throughout the country. It contains not only information on the spelling and historical development of stratigraphic names but also a comprehensive bibliography on Australian geology. Increasingly, the value of standard stratigraphic unit nomenclature is being recognised, and this database plays a pivotal role in aiding communication on stratigraphic names in the Australian earth science community.

This Guide presents an overview of the database structure and its links to other AGSO databases. Comprehensive database definitions are supplied as a schema in an appendix. The Guide describes in some detail the data entry and query forms and report programs available for presenting the information contained in the database. More examples of output from the reports are contained in an appendix.

1. INTRODUCTION

Australian stratigraphic names and their usage in the literature have been recorded by the National Register of Stratigraphic Names for a long time. In recent years this data set has been computerised and made widely accessible. The Australian Stratigraphic Names Database is the national authority on stratigraphic names and part of a corporate database on Australian geology for which the Australian Geological Survey Organisation is the custodian. In presenting this *Guide to the Australian Stratigraphic Names Database* the Geoscience Database Development Group at AGSO hope to ensure that this valuable resource becomes more widely used in the Australian earth science community.

2. SOME HISTORY

The National Register of Stratigraphic Names was set up by AGSO's predecessor, the Bureau of Mineral Resources (BMR), in 1949 to help geoscientists adhere to the (then) newly created Australian Code of Stratigraphic Nomenclature. With a great deal of help from the State Surveys, lists of names and references were produced and published in the 1950s and early 1960s as State Lexicons of stratigraphic names. An update volume was published in 1975. The central register of all stratigraphic names, both reserved and published, is maintained in collaboration with the Geological Society of Australia's Stratigraphic Names Committee.

All information went onto index cards until 1979 when the database was computerised, first in a Hewlett Packard Image database called GEODX (Geological Index) with a division between published names and reserved names. In the eighties it was one of the first BMR databases to be transferred into Oracle, the corporate relational database management system (RDBMS), more or less maintaining the Image structure (Lenz & Modrak, 1990).

In the early nineties the need arose for a computerised Stratigraphic Lexicon of current names only, as a reference tool for other areas of BMR. The existing GEODX structure could not easily be used for this purpose. In 1991 a lexicon was produced by supplying a subset of names from GEODX called Stratlex which field geologists used and supplemented with any new names needed. Unfortunately, there was no regular update of the lexicon (Stratlex) from GEODX or *vice versa* which caused as many problems as had been solved.

In 1994 the Register became part of AGSO's National Geoscience Information System (NGIS) Program and the decision was taken to re-unite GEODX and Stratlex with the aim of making the information on stratigraphic names more useful, more current and more easily available. This was achieved in April 1995 by redesigning the stratigraphic names part of GEODX, and combining all information in the Lexicon and in both the reserved names and published names tables of GEODX in one table called STRATNAMES.

STRATLEX became a view of the current names in the STRATNAMES table. Current names were determined to be all those published, reserved or informal names

that have not been identified as obsolete or superseded, misspelt or permanently informal. The number of current names in the database will continue to decline for some time, as data not previously recorded comes to light. New publications, the Stratigraphic Names Committee and the State Geological Surveys are all assisting with this work, but expert advice is always welcome.

Fields for information such as *status*, *currency*, *rank*, *parent* unit, *overlying* and *underlying* unit were additions to the STRATNAMES table. Wherever possible, the values for the new fields were derived from information already existing in unstructured comments fields. Additional limited resources were made available to bring the database up-to-date, but the expert knowledge of all field geologists is still needed to help fill in remaining blanks.

3. AGSO's CORPORATE DATABASE ENVIRONMENT

The Stratigraphic Names Database is implemented in Oracle version 7, AGSO's corporate relational database management system, which runs on a DG AViiON 6250 server under the Unix 5.4 operating system. It is accessible throughout the organisation via a TCP/IP Ethernet backbone which is bridged to several local Novell PC LANs and also to outside users via the Internet. Most AGSO users can use the data entry and query forms set up in Oracle Forms 3 on the AViiON server on their PCs or Macintoshes with the help of a VT220 terminal emulator (as for instance in Novell's 'LAN Workplace for DOS'). At the moment AGSO database forms are being converted to graphical client/server applications implemented in Oracle Forms 4.5, and in the near future the forms described and illustrated in this guide will change in both appearance and functionality. For further information on the database environment refer to Lenz *et al.* (1993) and Kucka (1994).

4. STRUCTURE OF THE DATABASE

The owner of the Stratigraphic Names Database, and the name of the full database (which comprises both stratigraphic name details and bibliographic references) is GEODX. The objects belonging to GEODX include 20 data tables and 8 views, of which 5 tables and 3 views form the stratigraphic names part of the database. The two parts are linked by a table called STRATNAME_ARTICLE.

Figure 1 is a diagrammatic representation of the structure of the Stratigraphic Names Database including the objects that belong to the bibliographic part of GEODX. Each box in the diagram represents an entity within the database, the clear boxes are data tables, the shaded boxes are so-called views. (Views are similar constructs to tables in that they are used to present data - contained in one or more tables -, but views do not store any data themselves. They are very useful for making subsets or combinations of data available.) The lines between boxes show which entities are related to others, mostly in one-to-many relationships, the 'many' end indicated by crows' feet.

The SQL statements used to create the database are listed in Appendix A: Database Definitions. The two main entities are STRATNAMES and ARTICLE, with fields *stratno* and *cd_article* being their respective unique identifiers or **primary keys**.

These primary keys are repeated in most of the other tables as part of their primary keys. For historical reasons the name *unitno* has been retained for field *stratno* in table FLATSTRAT and view STRATLEX (see Appendix B), and *cd_article* is called *code* in view BIBLIOG.

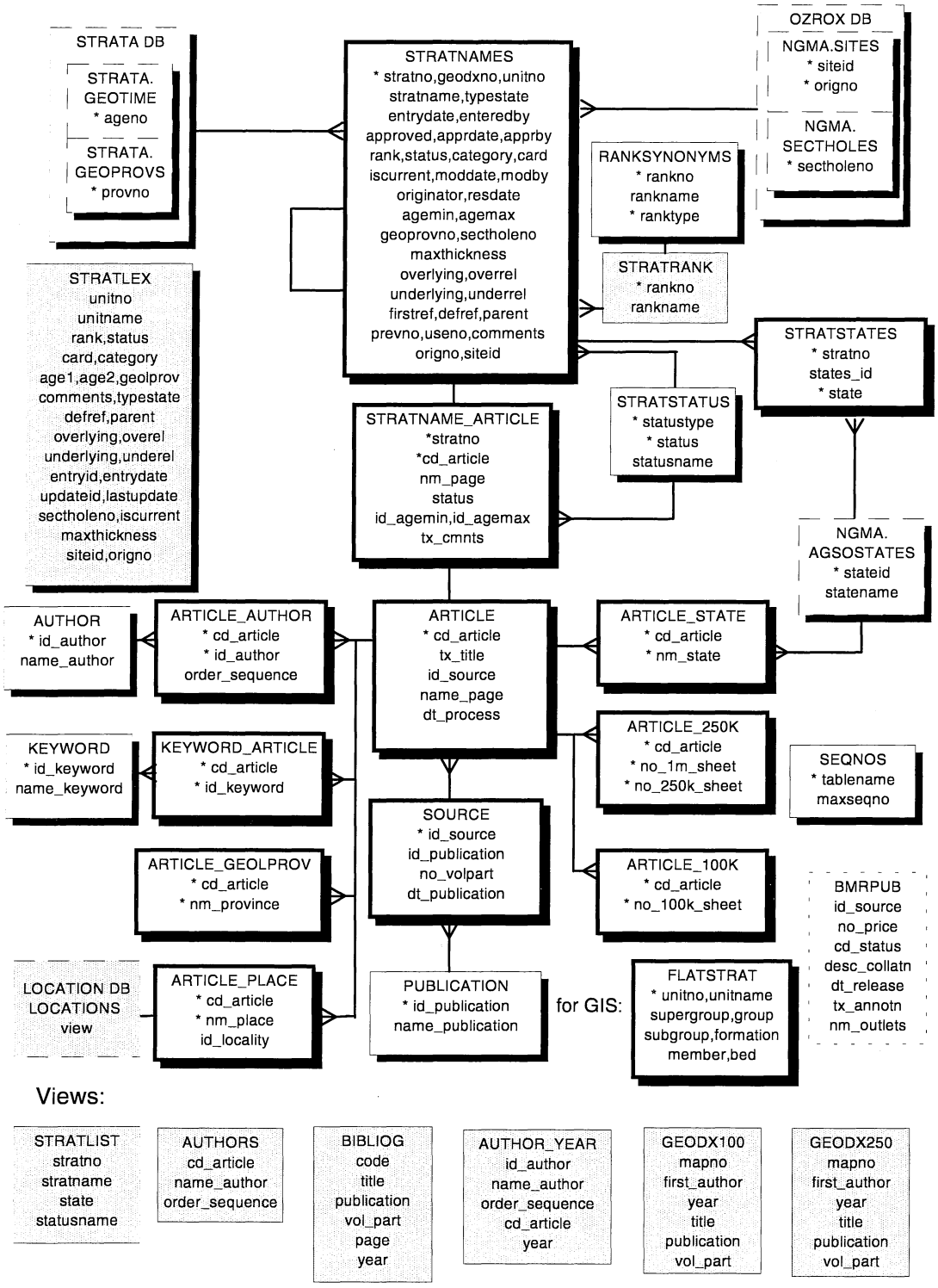


Figure 1. Structure of the Stratigraphic Names Database.

Following is a list of all tables and views, including lookup tables from OZROX, AGSO's Field Geology Database, and STRATA, the Stratigraphic Authority Database (Ryburn *et al.*, 1995a), which are referenced by GEODX tables:

TABLE/VIEW NAME	CONTENTS
GEODX.STRATNAMES	all stratnames details
GEODX.FLATSTRAT	parentage table of all current stratnames
GEODX.STRATLEX	a subset of attributes (view) of all **current** stratnames
GEODX.STRATLIST	view of all stratnames, their state/s and status
GEODX.STRATSTATES	states for each stratname
GEODX.STRATSTATUS	lookup table for stratname status
GEODX.RANKSYNONYMS	lookup table for stratname ranks
GEODX.STRATRANK	view of RANKSYNONYMS
NGMA.AGSOSTATES	lookup table for state abbreviations
STRATA.GEOPROVS	list of Australian geological provinces
STRATA.GEOTIME	list of geological time terms
STRATA.STRATRELS	lookup: relationships between stratigraphic units
NGMA.SITES	ground sites location,accuracy and lineage
NGMA.ORIGINATORS	list of contributors of data to AGSO databases
NGMA.SECTHOLES	measured section and drill hole data
GEODX.STRATNAME_ARTICLE	usage details of stratnames
LOCATION.LOCATIONS	view of Australian locality names, used as lookup
GEODX.ARTICLE	article details
GEODX.SOURCE	publication dates and volume/part numbers
GEODX.PUBLICATION	list of publication names (acts as lookup table)
GEODX.AUTHOR	list of author names (acts as lookup table)
GEODX.ARTICLE_AUTHOR	link between ARTICLE and AUTHOR
GEODX.KEYWORD	list of keywords
GEODX.KEYWORD_ARTICLE	link between KEYWORD and ARTICLE
GEODX.ARTICLE_GEOLPROV	geological provinces in an article
GEODX.ARTICLE_PLACE	place names in an article
GEODX.ARTICLE_STATE	states mentioned in an article
GEODX.ARTICLE_250K	1:250 000 maps in an article
GEODX.ARTICLE_100K	1:100 000 maps in an article
GEODX.GEODX100	view of AGSO/BMR publications per 100 000 map
GEODX.GEODX250	view of AGSO/BMR publications per 250 000 map
GEODX.AUTHORS	view of author names and their order per article
GEODX.BIBLIOG	view of reference details
GEODX.AUTHOR_YEAR	view of authors and publication year per article
GEODX.BMRPUB	details of BMR publications (not used by GEODX)

FLATSTRAT

The table FLATSTRAT is an additional data structure specifically designed for making parentage information easily available to GIS users. Information on the hierarchy of stratigraphic units can be obtained through the *parent* pointer in the STRATNAMES table, but it requires rather complex SQL statements that are slow to run. It was decided to create a 'flattened' table of current stratigraphic names with all their parent units, to speed up and simplify this kind of retrieval. (Examples of SQL query statements for similar retrievals from both tables are given in Appendix A: Database Definitions).

The table was initially populated by running a SQL script, but is now maintained by database triggers that fire whenever a record is inserted into, deleted from, or updated in STRATNAMES. These triggers are also listed in Appendix A.

5. ACCESS TO THE DATABASE

Stratigraphic Names Database Menu

The Australian Stratigraphic Names Database is a publicly accessible AGSO database. All AGSO users with a valid Oracle logon belong to the Oracle user role INTERNAL and can access the database on the AViiON from their workstation for querying. Only selected users have *insert*, *delete* and *update* rights to all or parts of the database. Users outside of AGSO can query the database through the World Wide Web, since they belong to the Oracle user role EXTERNAL which has been granted *select* access to the relevant tables, and a query facility has been set up. At the moment there are two report programs on the WWW which retrieve data from the Stratigraphic Names Database (see Chapter 8: Report Programs), but in the future more flexible retrieval programs will be made available.

Most AGSO users access the database via the Stratigraphic Names Database Menu by typing ***geodx*** at the AViiON prompt and supplying their Oracle logon and password when requested. Figure 2 shows the Stratigraphic Names Database menu system.

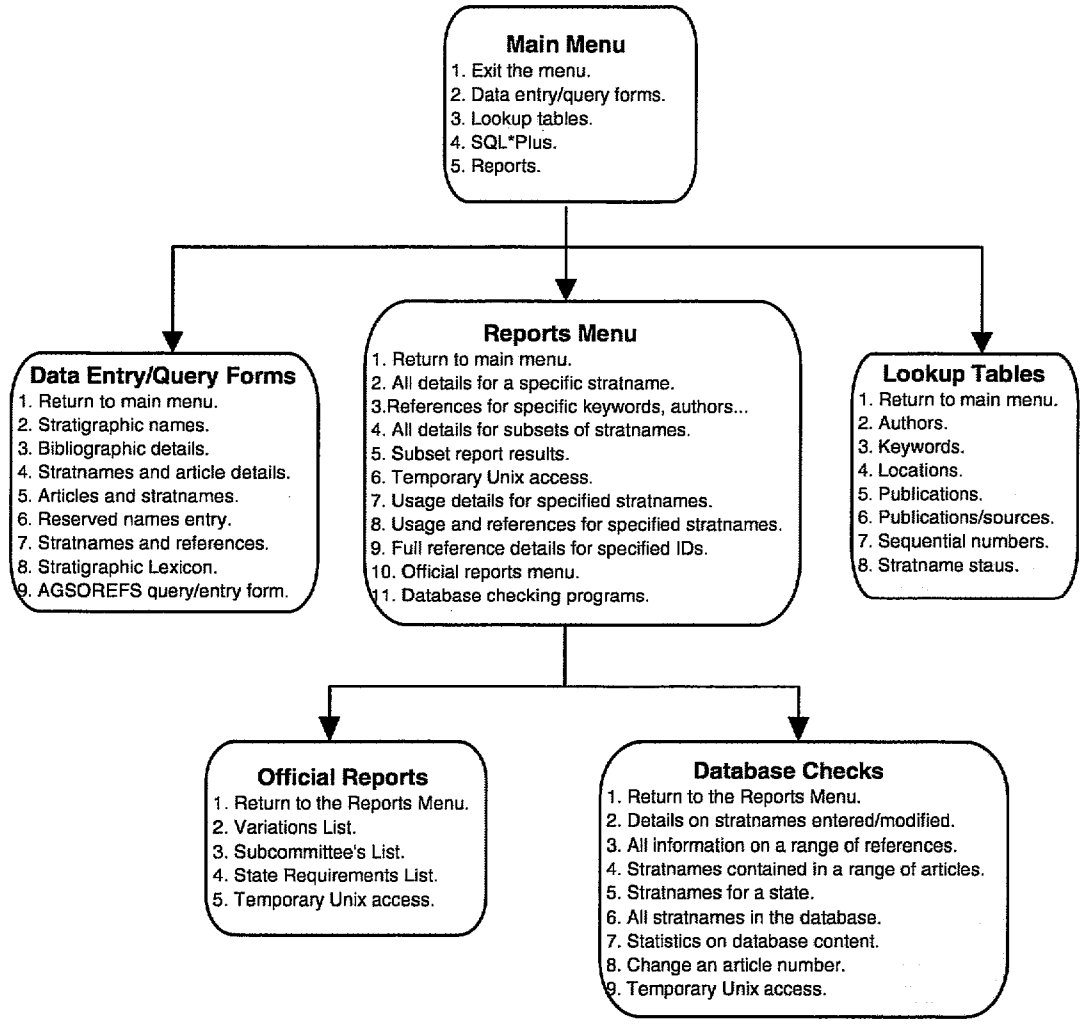


Figure 2. The three levels of the Stratigraphic Names Database Menu.

Option 1 on the Main Menu takes the user back to the operating system. Options 2 and 3 lead to the data entry and retrieval forms and the lookup tables discussed in detail in Chapter 6. Option 4 takes the user who is conversant in Oracle's version of the Structured Query Language (SQL*Plus) into this environment for running of ad-hoc queries and/or reports (Chapter 7). Finally, option 5 takes the user to a suite of report programs discussed in Chapter 8. Some of the menu options are only visible to data entry staff (eg. the Reserved Names entry form and the database checking programs).

Links to other databases

Other databases within AGSO, eg. OZROX - AGSO's Field Geology Database, are linked to the Stratigraphic Names Database in such a way that the STRATNAMES table is used as an authority table, thereby ensuring the correct spelling and usage of stratigraphic unit names. Project geologists in AGSO are encouraged to use the Stratigraphic Lexicon Form (see Chapter 6: Entry/Query Forms) to retrieve information on all current stratigraphic names. The Stratigraphic Lexicon Form is also part of the OZROX menu system (Ryburn *et al.*, 1995a). The Stratigraphic Names Database in turn uses tables in other databases as lookups. See Chapter 4: Structure of the Database, for a list of all tables used.

AGSOREFS

Reference information stored in GEODX is also accessible through the AGSOREFS database. AGSOREFS is a shared bibliographic database for all AGSO users which incorporates and makes available to other AGSO databases the bibliographic data in the GEODX database system. This was achieved by a union of the tightly-controlled GEODX tables with some simpler data structures (see Ryburn & Bond, 1995). Access to AGSOREFS is possible through the AGSOREFS Form from the Forms Menu.

WWW access

World Wide Web (WWW) access to the Stratigraphic Names Database is discussed in Chapter 8: Report Programs.

GIS access

The STRATLEX view and the FLATSTRAT table which is based on STRATLEX can be used for easy retrieval of stratigraphic names into Geographic Information Systems (GIS) such as ArcInfo. Views GEODX100 and GEODX250 of the bibliographic part of the Stratigraphic Names Database were specifically created for use in GIS coverages, to show the AGSO/BMR publications for each map sheet.

6. ENTRY/QUERY FORMS

Data entry and retrieval forms developed in Oracle Forms version 3 cover all aspects of the data entry and maintenance work of the Stratigraphic Index Section and provide an easy way for other users to query the database. By means of triggers (certain keystrokes cause certain events to occur) the user can move from most forms into other forms for data verification or display of related data. These options will be mentioned in the discussion of each form below. For general information on the use of Oracle forms refer to Lenz et al. (1993).

Following is a description of the data entry and retrieval forms accessible from the GEODX menu.

Stratigraphic Names Form

The Stratigraphic Names Form covers information contained in two tables, STRATNAMES and STRATSTATES, but it has been designed to behave as though all its data belong just to one table. Basically what that means is that navigation through the whole form is via the <NEXT FIELD> and <PREVIOUS FIELD> keys. The LIST function is available on many fields and is generally very useful for minimising typing and avoiding misspellings. Using <LIST> in data *entry mode* on any of the fields for a stratigraphic name takes the user into the Stratlist Form, which shows some additional details (Fig. 3). In *query mode* the LIST function interrogates the STRATNAMES table directly which can be rather slow, so is best avoided.

Australian Stratigraphic Names Database

26342	Amber Slate	TAS	Described
21128	Amberley	WA	Reserved
29699	Amberley Park Ignimbrite	VIC	Superseded
29952	Amberly Volcaniclastic Member	VIC	Reserved
353	Amberoona Formation	SA	Fully described
354	Amberoona Shale	SA	Mentioned
355	Amberoona Formation	SA	Superseded
23332	Ambone Volcanics	NSW	Defined
356	Amboyne Granite	VIC	Informal
357	Amboyne Granodiorite	NSW	Defined

Figure 3. The Stratlist Form which is used for the LIST function.

Validation of the data entered is automatic, and some fields are automatically updated as data is entered into other fields, even when they are entered into fields in other forms. For example, the article ID (*cd_article*) of the defining reference is inserted into field *defref* in table STRATNAMES when 'Defined' is entered into the *status* field in the usage part of the Article and Stratnames Form.

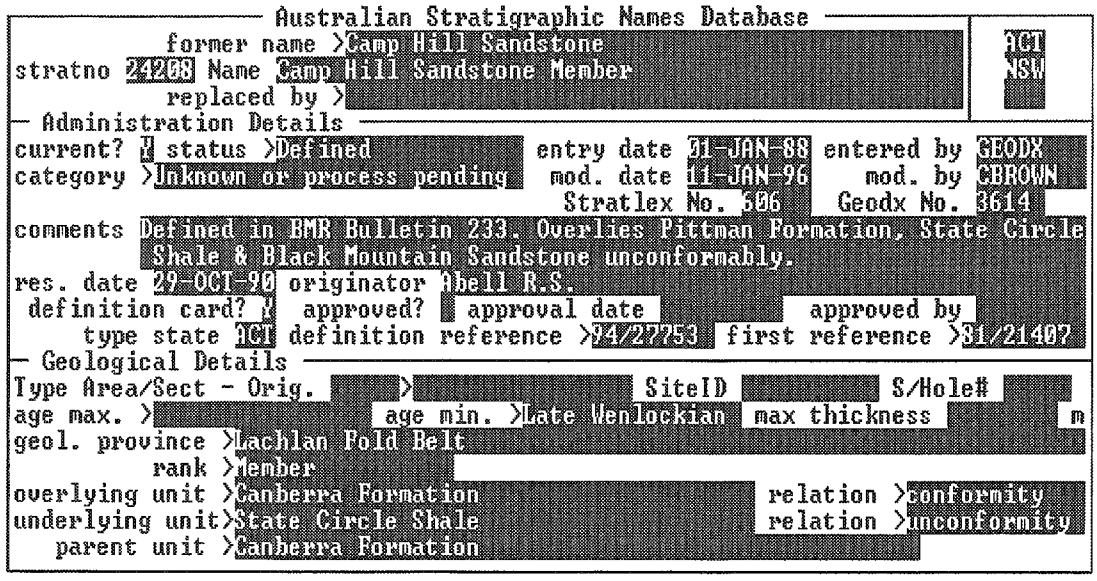


Figure 4. The Stratigraphic Names Form.

The Stratigraphic Names Form displays in full the information collected on stratigraphic names - other forms that include names only display subsets of the complete dataset. All columns in the STRATNAMES table, i.e. all field names in this form, will be described in detail here; the subsequent description of other forms with stratigraphic name content will be kept to a minimum. The actual column name (in italics in brackets) for each field follows the name displayed on the form.

stratno (*stratno*) - mandatory 5-digit number which is automatically supplied on insertion of a new stratigraphic name's record into the database. This is the unique identifier (**primary key**) of the STRATNAMES table. This field can only be entered in query mode.

Name (*stratname*) - mandatory 50-character field for the name of a stratigraphic unit. Stratigraphic names must be unique and cannot be altered through this form once entered into the database. Guidelines for the creation of new names apply (see Appendix C). Pressing <NEXT PRIMARY KEY> takes the user into the Stratnames and Article Details Form with the stratigraphic name and all its usages in references contained in the database displayed. In fact <NEXT PRIMARY KEY> works in this way in most of the fields in this form, except for other name fields. To return to the Stratigraphic Names Form press <EXIT>. This field has a LIST function that is very useful in data entry mode: type in the name/part of the name of the stratigraphic unit and press <LIST> to display the relevant names from the STRATNAMES table. For name queries it is usually better to just enter part of the name and '%' (Oracle's wildcard) and then press <EXECUTE QUERY>. Use the <UP> and <DOWN> arrows to see the details for each name that satisfies the query.

replaced by - lookup value of the stratigraphic name corresponding to the value in the *useno* field (not displayed). This field has a LIST function: type in part of the name and press <LIST> to display the relevant names from the STRATNAMES table. Any name being entered here must already exist in the database. If the name of a stratigraphic unit has been replaced (ie. this field contains an entry), pressing <NEXT PRIMARY KEY> will take the user into another copy of the

Stratigraphic Names Form with all the details of the superseding name displayed. Press <EXIT> to return.

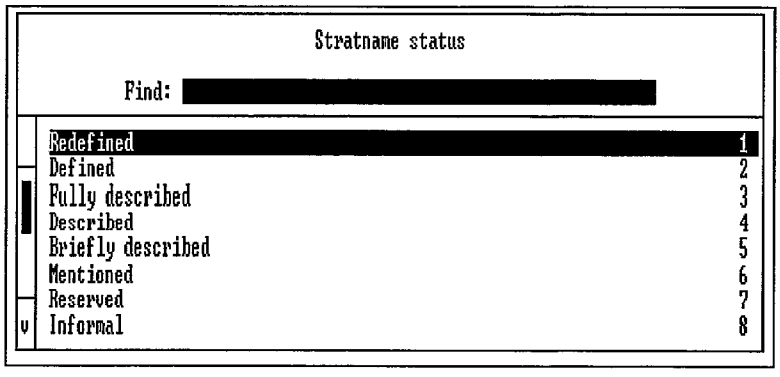
former name - lookup value of the stratigraphic name corresponding to the value in the *prevno* field (not displayed). This field has a LIST function: type in part of the name and press <LIST> to display the relevant names from the STRATNAMES table. Any name being entered here must already exist in the database. If a stratigraphic unit has a former name (ie this field has an entry), pressing <NEXT PRIMARY KEY> will take the user into another copy of the Stratigraphic Names Form with all the details of the former name displayed. Press <EXIT> to return.

state (*state*) - 3-character field for the abbreviation of the state. Upper case is enforced. Each stratigraphic name must belong to at least one state. The LIST function available retrieves the data from the NGMA.AGSOSTATES table plus 'ATA' for Antarctica.

Administration Details:

currency (*iscurrent*) - mandatory 1-character field for the currency with permissible values of Y (yes) or N (no). The default for new names is 'Y'; upper case is enforced. A LIST function is available.

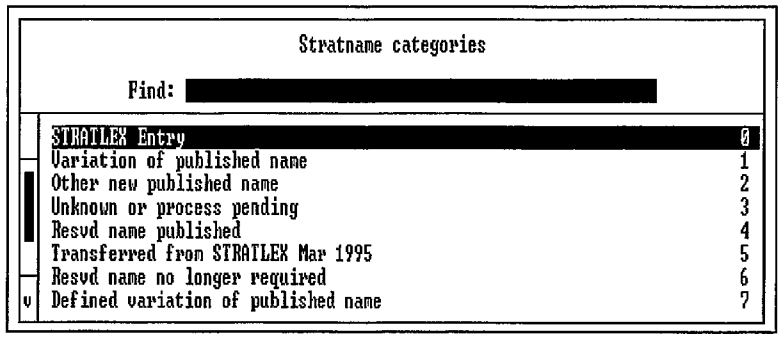
status - lookup value for the status (eg. Defined, Briefly described, Reserved, Obsolete, Informal) corresponding to the value in field *status* (not displayed). This mandatory field has a LIST function: press <LIST> to display the permissible status types from the STRATSTATUS table. The status of a current published name is an indication of how much information is available in the best reference (status 1 - 6, see diagram below). For names that are not current, the status is intended to explain why they are not current. Here the possible values are: 8 - Informal, 9 - Superseded, 10 - Probably obsolete, 11 - Obsolete, 12 - Probably misspelt, 13 - Misspelt, 99 - Process pending. This field is selectively automatically updated, when a new reference, with better information, is added to the database through the Article and Stratnames Form.



entry date (*entrydate*) - mandatory date field which is populated with the system date on inserting a new record. This field can only be entered in query mode (Oracle date format: 19-OCT-95).

entered by (*enteredby*) - mandatory 8-character field which is populated on inserting a new record with the Oracle logon name of the person entering data. This field can only be entered in query mode.

category - lookup value for the stratname category corresponding to the value in field *category* (not displayed). This mandatory field has a LIST function: press <LIST> to display the permissible category types from the STRATSTATUS table (see diagram below). This field is used, in combination with the *status* field, to distinguish different types of new stratigraphic names, particularly for the Variations List (see Chapter 8 - Report Programs).



mod. date (*moddate*) - date field which is updated automatically each time changes to the stratname record are committed to the database. This field can only be entered in query mode.

mod. by (*modby*) - 8-character field which is updated automatically with the Oracle logon of the person committing changes to a stratname record to the database. This field can only be entered in query mode.

Stratlex No. (*unitno*) - 5-digit number for the unique number of the stratigraphic name in the old Stratigraphic Lexicon. This field is only displayed for historical reasons; it will be phased out eventually. It is queryable.

Geodx No. (*geodxno*) - 5-digit number for the unique number of the stratigraphic name in the STRATNAME table of the old GEODX database. This field is only displayed for historical reasons; it will be phased out eventually. It is queryable. Due to changes in the database structure, not all of the old GEODX numbers are displayed for names that apply across State borders.

comments (*comments*) - 255-character free-text field for comments relating to the stratigraphic name eg.radiometric age determinations, equivalent units, intended usage for reserved names.

res. date (*resdate*) - field for the date the name was reserved (Oracle date format: 12-OCT-95).

originator (*originator*) - free-text field of 80 characters. Often several persons are the originator of a new reserved name.

definition card? (*card*) - mandatory 1-character field with two permissible values: Y (yes) or N (no). The default is 'N', and upper case is enforced. All new stratigraphic units should be defined. Unit definitions should be approved by State Stratigraphic Names Subcommittees, and then a copy supplied to the National Register. This copy used to be in the form of a typed or handwritten card, but now virtually any format is accepted, including via email.

approved? (*approved*) - 1-character field with two permissible values: Y (yes) or N(no). Upper case is enforced. This field is used to record approval of unit definitions (*card*) by the relevant State Subcommittee.

approval date (*apprdate*) - date the unit definition was approved (Oracle date format: 03-MAR-96).

approved by (*apprby*) - 8-character field for the (abbreviated) name of the person (Subcommittee Chairperson) approving a unit definition.

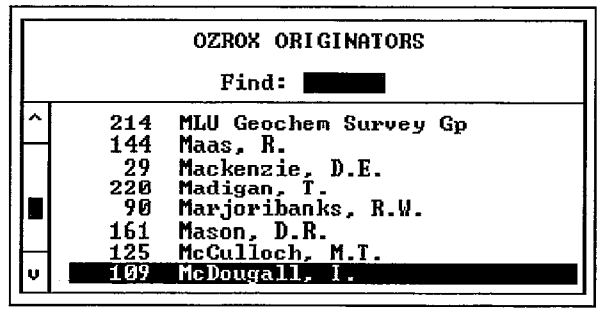
type state (*typestate*) - the abbreviation of the state/territory in which the type section for the stratigraphic unit lies. Entries are checked against NGMA's AGSOSTATES table, the contents of which can be displayed with the LIST function.

definition reference (*defref*) - 9-character field for the entry of the reference ID (*cd_article*) of the article with the definition of the stratigraphic unit. Values entered are checked against the ARTICLE table. The definition reference is automatically entered into this field when the status is updated to 'Defined' in the Article and Stratnames Form. Pressing <NEXT PRIMARY KEY> takes the user into the Bibliographic Details Form with the definition reference displayed in full. Press <EXIT> to return.

first reference (*firstref*) - 9-character field for the entry of the reference ID (*cd_article*) of the first (oldest) article in GEODX which contains a reference to the stratigraphic unit. Values entered are checked against the ARTICLE table. The first reference is automatically entered into this field when the name is selected for the first time in the Article and Stratnames Form. Pressing <NEXT PRIMARY KEY> takes the user into the Bibliographic Details Form. Press <EXIT> to return.

Geological Details: The following fields refer to the ***geographic site*** and ***type section*** information in the OZROX Field Geology Database (Ryburn *et al.*, 1995a).

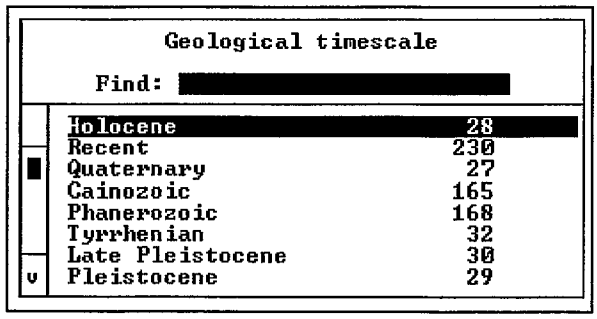
Type Area/Sect. - Orig. (*origno*) - 5-digit field for the number of the originator of the information in the SITES table in OZROX. This field has a LIST function: press <LIST> to display an alphabetical listing of all values contained in the ORIGINATORS table in OZROX (see diagram below). All entries into this field are checked against that table, the corresponding originator name is displayed in the next field.



SiteID (*siteid*) - 16-character field for the Site ID of the corresponding record in the SITES table in OZROX. The *origno/siteid* combination must exist in that table.

S/Hole# (*sectholeno*) - 6-digit field for the number of the measured section (or drill hole) associated with this type section in the SECTHOLES table in OZROX. Entries into this field are checked against that table.

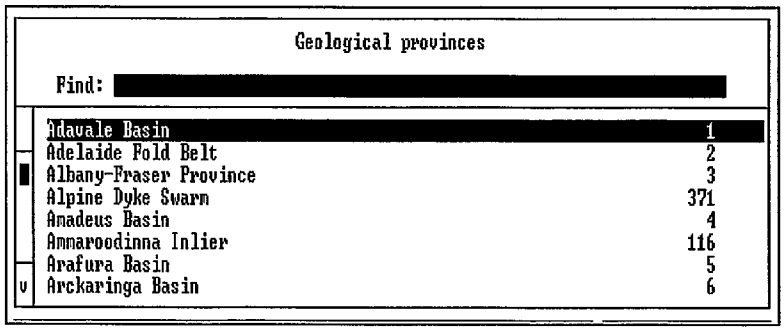
age max. - lookup value of the age term corresponding to the value in the *agemax* field (not displayed). This field has a LIST function which displays the age terms in the STRATA.GEOTIME table in age order, youngest to oldest. The user can choose a partial list by typing a few letters of the age term wanted, eg.%Sil <LIST> will show: Silesian, Late Silurian, Silurian and Early Silurian. Validation triggers prevent entry of an age younger than *agemin*.



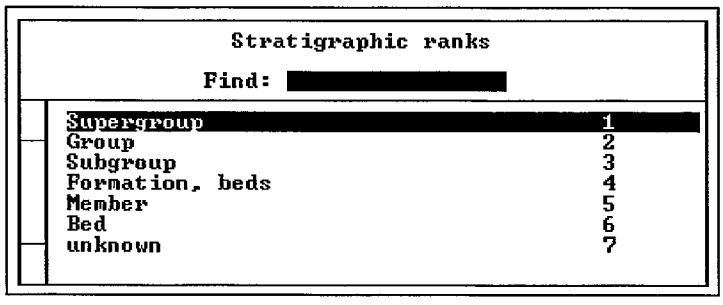
age min. - lookup value of the age term corresponding to the value in the *agemin* field (not displayed). This field has a LIST function which displays the age terms in the STRATA.GEOTIME table. Again, users can choose a partial list as with *agemax*. Validation triggers prevent entry of an age older than *agemax*.

max thickness (*maxthickness*) - 7-digit field (5 digits before, 2 after the decimal point) for the (estimated, if not measured) maximum thickness of the stratigraphic unit, in metres.

geol. province - lookup value of the name of the geological province corresponding to the value in the *geoprovno* field (not displayed). This field has a LIST function: type in part of the name of the geological province and press <LIST> to display the relevant names from the GEOPROVS table in STRATA (see diagram below). Any name being entered here must already exist in that table.

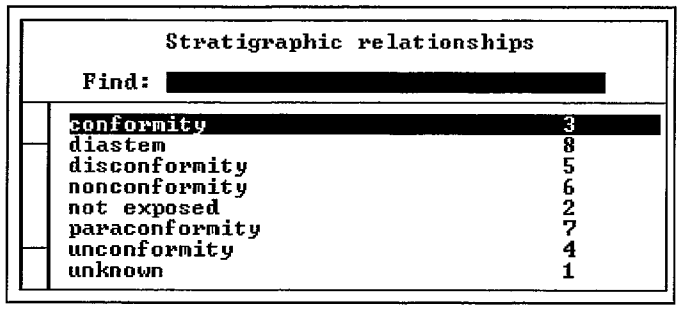


rank - lookup value of the name of the rank of the stratigraphic unit corresponding to the value in the *rankno* field (not displayed). A rank is automatically inserted when a new unit name is entered but can be updated if necessary. This field has a LIST function: press <LIST> to display the permissible rank terms from the STRATRANKS view (see diagram).



overlying unit - lookup value from the STRATNAMES table of the overlying stratigraphic unit name corresponding to the value in the *overlying* pointer (this 5-digit number field is not displayed). This field has a LIST function: type in part of the name of the overlying unit and press <LIST> to display the relevant names from the STRATNAMES table. Any name being entered here must already exist in the database. Pressing <NEXT PRIMARY KEY> takes the user into another copy of the Stratigraphic Names Form displaying all the details for the overlying unit. Press <EXIT> to return.

relation - two fields for lookup values from the STRATA.STRATRELS Stratigraphic Relations table corresponding to 1-digit numbers in fields *overrel* and *underrel* (not displayed). A LIST function displays all permissible values for these fields.



underlying unit - lookup value from the STRATNAMES table of the underlying stratigraphic unit name corresponding to the value in the *underlying* pointer (this 5-digit number field is not displayed). This field has a LIST function: type in part of the name of the underlying unit and press <LIST> to display the relevant names from the STRATNAMES table. Any name being entered here must already exist in the database. Pressing <NEXT PRIMARY KEY> takes the user into another copy of the Stratigraphic Names Form displaying all the details for the underlying unit. Press <EXIT> to return.

parent unit - lookup value from the STRATNAMES table of name of the parent unit corresponding to the value in the *parent* pointer (this 5-digit number field is not displayed). This field has a LIST function: type in part of the name of the parent unit and press <LIST> to display the relevant names from the STRATNAMES table. Any name being entered here must already exist in the database, and have a suitable rank to be a parent to the unit in question. Pressing <NEXT PRIMARY KEY> takes the user into another copy of the Stratigraphic Names Form displaying all the details for the parent unit. Press <EXIT> to return.

Stratigraphic Lexicon Form

The Stratigraphic Lexicon STRATLEX was originally created as a separate table in the STRATA Stratigraphic Authority Database. It was intended to provide a simple list of current stratigraphic names, excluding all the variations, misspellings, obsolete and superseded names that have been published over the years (see Chapter 2: Some History). STRATLEX had completely different column names to the ones used in the old GEODX tables. When the decision was made to revamp the Stratigraphic Names part of GEODX, re-combine STRATLEX with GEODX and create STRATLEX as a view of the current names in the new STRATNAMES table, the column names for that view were taken from the original STRATLEX table, as forms and programs already written incorporating all those column names were being used in several other areas of AGSO. In the following description of the Stratigraphic Lexicon Form the equivalent column name from the STRATNAMES table is added to the column name in STRATLEX where they differ.

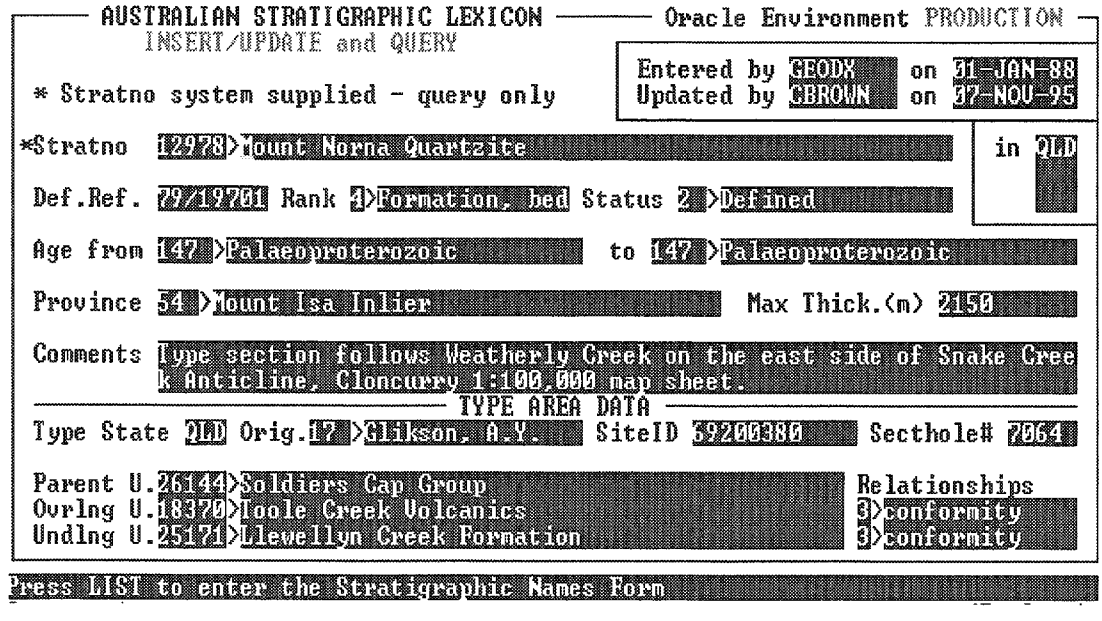


Figure 5. The Stratigraphic Lexicon Form.

Of the 38 fields in the Stratigraphic Names Form only 24 appear in the Stratigraphic Lexicon Form. The missing fields are historical information (eg. former name, first reference), details relating to reservation of names and approval of definitions, or they do not apply to current names (eg. the replaced by field). The Stratigraphic Lexicon Form fields are:

Entered by (*entryid* = *enteredby*) - as in the Stratigraphic Names Form.

on (*entrydate*) - as in the Stratigraphic Names Form.

Updated by (*updateid* = *modby*) - as in the Stratigraphic Names Form.

on (*lastupdate* = *moddate*) - as in the Stratigraphic Names Form.

Stratno (*unitno* = *stratno*) - as in the Stratigraphic Names Form. The next field (*unitname* = *stratname*) is a mandatory 50-character field for the name of a

stratigraphic unit. Stratigraphic names must be unique and cannot be altered through this form once entered into the database. Guidelines for the creation of new names apply (see Appendix C). The LIST function takes the user to the Stratigraphic Names Form, with any selected name displayed.

in (*state*) - as in the Stratigraphic Names Form.

Def.ref. (*defref*) - as in the Stratigraphic Names Form. The LIST function takes the user into the Bibliographic Details Form with the definition reference displayed.

Rank (*rank*) - 1-digit field for the stratigraphic rank of the unit. It is automatically inserted on entry of a name but can be updated if necessary. The LIST function displays the permissible values from the STRATRANK view of the RANKSYNONYMS table. The next field displays the description of the rank.

Status (*status*) - 2-digit field for the status of the stratigraphic name. The default value for new entries is status = 8 (Informal). The LIST function displays the status values 1 to 8 (Redefined to Informal; higher status values are not applicable to current names) from the STRATSTATUS table. The next field displays the description of the status value.

Age from (*age1 = agemax*) - 4-digit field for the number code of the maximum age of the stratigraphic unit. The LIST function retrieves the geological time terms no younger than the entry in *age2* from the GEOTIME table of the STRATA Stratigraphic Authority Database. The next field displays the age term in full.

to (*age2 = agemin*) - 4-digit field for the number code of the minimum age of the stratigraphic unit. The LIST function retrieves the geological time terms no older than the entry in field *age1* from the GEOTIME table of the STRATA Stratigraphic Authority Database. The next field displays the age term in full.

Province (*geolprov = geoprovno*) - 3-digit field for the geological province number. The LIST function displays the provinces from the GEOPROVS table in STRATA. The next field displays the name of the province corresponding to the entry in this field.

Max Thick.(m) (*maxthickness*) - as in the Stratigraphic Names Form.

Comments (*comments*) - as in the Stratigraphic Names Form.

Type State (*typestate*) - as in the Stratigraphic Names Form.

Orig. (*origno*) - as in the Stratigraphic Names Form.

SiteID (*siteid*) - as in the Stratigraphic Names Form.

Secthole# (*sectholeno*) - as in the Stratigraphic Names Form.

Parent U. (*parent*) - 5-digit field for the *stratno* of the parent unit. The LIST function retrieves an alphabetical list of all current names in the STRATNAMES table. It is generally more efficient to use the next field for queries. The next field is for display of the name of the parent unit, but it is also queryable: Enter all/part of the name and press <LIST> to retrieve the name plus its *stratno* from the Stratlist Form. A message will inform the user if the entered name is not current and also if a name exists in the database which should be used instead. Only current names will be accepted by the form for the parent unit.

Ovrlng U. (*overlying*) - 5-digit field for the *stratno* of the overlying unit. The LIST function retrieves an alphabetical list of all current names in the STRATNAMES table. It is generally more efficient to use the next field for queries. The next field is for display of the name of the overlying unit, but it is queryable as for Parent U.

Undlng U. (*underlying*) -5-digit field for the *stratno* of the underlying unit. The LIST function retrieves an alphabetical list of all current names in the STRATNAMES table. It is generally more efficient to use the next field for queries. The next field is for display of the name of the underlying unit, but it is queryable as for Parent U.

Relationships (*overel* = *overrel*; *underel* = *underrel*) - two 3-digit fields for the number code of the relationship to the overlying/underlying stratigraphic unit. The LIST function displays the permissible values for these fields from the STRATRELS table of the STRATA Stratigraphic Authority Database. The next fields display the full descriptive terms for the codes in fields *overel* and *underel.*

On committing a new stratigraphic name's record through the Stratigraphic Lexicon Form default values are inserted into the additional mandatory fields *card* ('N') and *iscurrent* ('Y') which are not displayed.

Bibliographic Details Form

The Bibliographic Details Form combines the data from 12 tables on the one screen (see Figure 6). The form behaves as though it was based on only one table. There are many form triggers working behind the scenes which coordinate the data in the various fields, check the entered values against the database and combine the data into the relevant sets for the different database tables. To query the database through the Bibliographic Details Form, on pressing <ENTER QUERY> the user is taken to a query form which looks nearly the same as the data entry form. The only noticeable difference is the word 'QUERY' at the top and the lack of sequential number fields after the author fields.

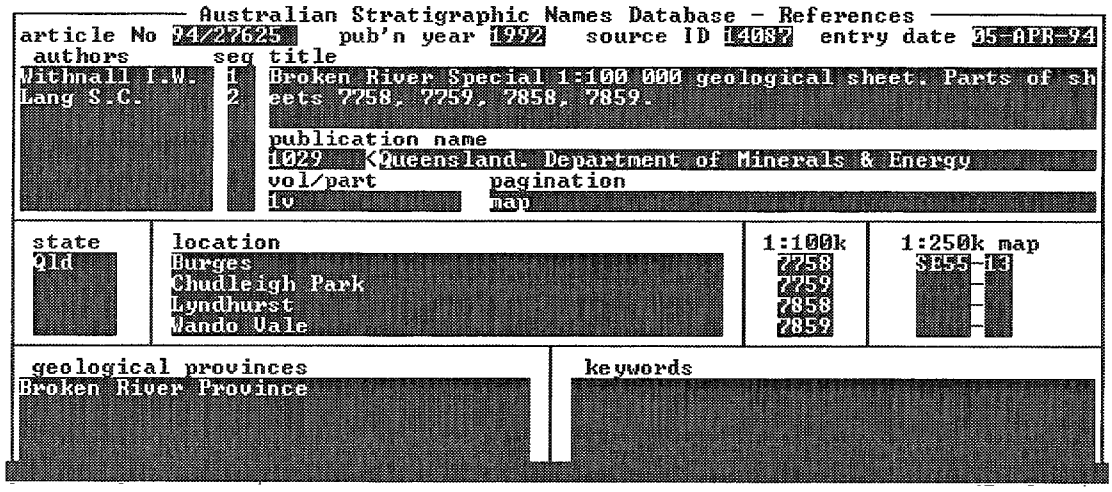


Figure 6. The Bibliographic Details Form.

From the reference details part of this form (eg. article No, pub'n year, title) the user can move into the Article and Stratnames Form to display the stratigraphic names associated with the reference by pressing <NEXT PRIMARY KEY>. Press <EXIT> to return.

The Bibliographic Details Form covers 12 tables, but you can move through the whole form by pressing <NEXT FIELD>, as though it covered only one table. The fields are:

article No (*cd_article*) - mandatory 9-character field for the reference identifier. When the decision is made to index a publication this unique identifier is assigned. In the past there have been different conventions for assigning it (for instance, the numbers of BMR Journals were prefixed with 'J', of BMR Reports with 'R'), but now all identifiers are made up of two digits for the year of indexing, followed by a '/', followed by a consecutive 5-digit number, eg. 95/28122. This *cd_article* is the primary key of the ARTICLE table, and part of the primary key for all tables that have a many-to-one relationship to it (see Figure 1).

authors (*name_author*) - mandatory 60-character field for the author's name in the following format: 'Black J.H.S.' (note: **no** comma after the surname). A LIST function is available: enter all or part of the surname and press <LIST> to retrieve all the relevant authors' names from the AUTHOR table. If the author name has been entered without using the LIST function, the database checks to

see if the author already exists in the database. If it does not already exist, a message tells the user to press <NEXT PRIMARY KEY> to add a new author to the database (in the Authors Form). To enter multiple authors into the Bibliographic Details Form just move forward with the <NEXT FIELD> key.

seq (order_sequence) - mandatory 2-digit field for the sequence number of authors. It is automatically incremented and assigned for each added author name, but can be manually changed if necessary.

pub'n year (*dt_publication*) - mandatory 4-digit field for the year of publication. If the year of publication is unknown, '9999' should be entered.

source ID (*id_source*) - mandatory 5-digit number that is system-assigned for each new combination of year of publication, volume and/or part number and publication name. This field can only be queried.

entry date (*dt_process*) - the system date is automatically inserted into this field on committing a new reference to the database. It can only be queried .

title (*tx_title*) - mandatory 240-character free-text field for the full article title.

publication name (*id_publication* and *name_publication*) - the first field displays the publication number of the publication whose name is in the 100-character second field. The first field can only be entered in query mode. A publication name must be entered. A LIST function is available on this field: enter part/all of the publication name and press <LIST> to retrieve the relevant name/s from the database. Should the name not already exist in the PUBLICATION table, press <NEXT PRIMARY KEY> to access the Publication Form for adding the new name.

vol/part (*no_volpart*) - 20-character free-text field for entering the volume and/or part numbers as any combination of characters or digits. A LIST function is available which retrieves all the existing volume/part numbers for the publication contained in the publication name field. The list shows largest values (which are usually the most recent) at the top. Note: this is an alphanumeric field which Oracle does not order in proper numeric order. Scroll through the list with the <UP> and <DOWN> arrow keys. Should this list not contain the one in hand, exit the list and enter the number into the field. On committing the reference to the database a new source ID will be created and appear in the Source ID field. For items other than journal articles (eg. single volume books, maps) the term '1v' is entered into this field.

pagination (*name_page*) - 50-character field for the range of page numbers in journal articles, the number of pages in a book or the word 'map' for maps.

state (*nm_state*) - 6-character field for the abbreviation of Australian state names. Some of the older references have been indexed against state values like 'Nor.Is', 'Sol.Is' or 'Timor', but states entered now must conform to the NGMA.AGSOSTATES table (upper case states of up to 3 characters) plus 'ATA' for Antarctica, although a value 'UNK' (unknown) is also acceptable.

location (*nm_place*) - 40-character field for place names which can be retrieved from the LOCATION database with the LIST function. This function takes the user into the Location Form which is based on the LOCATIONS table. This form is

also useful for retrieving relevant 1:100 000 map sheet numbers, but take care to retrieve the right location and map sheet. Many place names have multiple uses, sometimes within one State.

1:100k (*no_100k_sheet*) - 4-digit field for 1:100 000 map sheet numbers, eg. '7234'.

1:250k map (*no_1m_sheet, no_250k_sheet*) - the first field (4-characters) is for the ID of the 1:1 million map sheet, eg. 'SH56'; the second field (2 digits) for the number of the 1:250 000 map sheet (range 1 - 16).

geological provinces (*nm_province*) - 85-character field for names of geological provinces used in the reference. The LIST function retrieves the names of provinces already in the database. If a few characters of the province name are entered first, <LIST> retrieves the relevant subset. At present a new province can be added by typing its name into this field, but this may be limited in future by verification against the STRATA.GEOPROVS table (as is done for the geol. province field in the Stratigraphic Names Form).

keywords - lookup value of the name of the keyword corresponding to the value in field *id_keyword* (not displayed). This field has a LIST function: type in at least a few letters of the keyword and press <LIST> to display the relevant entries from the KEYWORD table to choose from. To add a new keyword in the Keywords Form press <NEXT PRIMARY KEY>.

Stratname and Article Details Form

This form (Figure 7) is mostly used to display where and how a particular stratigraphic name has been used. Enter the stratigraphic name or part of it and the '%' wildcard and press <EXECUTE QUERY>. Names satisfying the query will be displayed plus their currency, number, status, definition card, category and entry date details (as described for the Stratigraphic Names Form). This information from both the STRATNAMES and STRATSTATUS tables is displayed at the top of the form and can **not** be updated. Scroll through the retrieved list with the <DOWN> and <UP> arrows. Pressing <NEXT PRIMARY KEY> takes the user into the Stratigraphic Names Form and displays all the details for the particular stratigraphic name the cursor is on. Press <EXIT> to return.

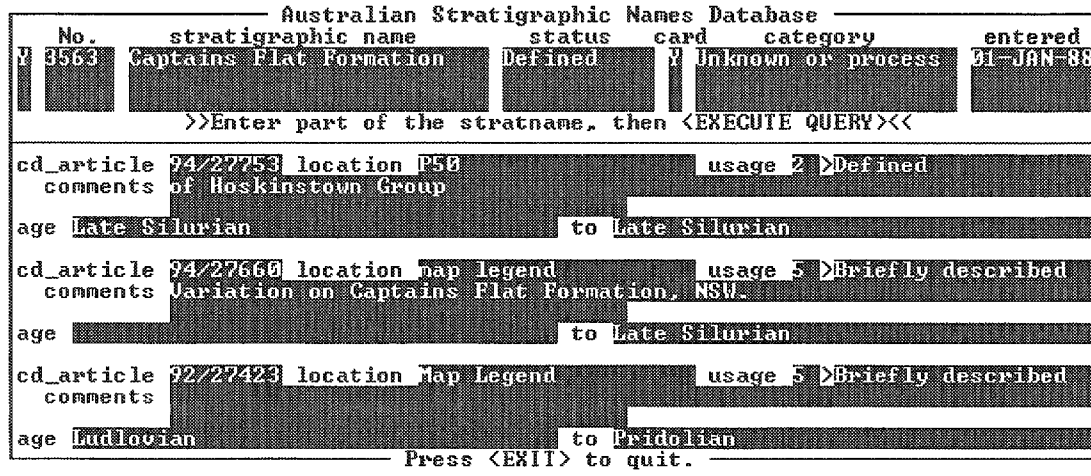


Figure 7. The Stratname and Article Details Form.

The usage details of the displayed stratigraphic name are shown in the second part of the form. Details are shown for all articles the name appears in. To scroll through all the usage records, press <NEXT BLOCK> and then use the <UP> and <DOWN> arrow keys. Data in this part of the form belong to table STRATNAME_ARTICLE. They can be updated and new records can be entered, although this form is not normally used for data entry. The fields are:

cd_article (*cd_article*) - as in the Bibliographic Details Form. Pressing <NEXT PRIMARY KEY> takes the user into that form and displays the bibliographic details of the particular article.

location (*nm_page*) - 20-character field for describing where the best information on the stratigraphic name occurs within the publication (eg. page, figure, table or appendix number, or map legend).

usage (*status*) - 2-digit field for the status of the occurrence of the name - is it described, defined or merely mentioned? A LIST function is available and displays the status options 1 - 6, Redefined to Mentioned, from the STRATSTATUS table. The next field displays the full status name for the status number. This status name field is also enterable; it has the same LIST attached to it.

comments (*tx_cmnts*) - 100-character field for additional comments on the usage of the stratigraphic name eg. parent unit, relationship to similar names, radiometric age, equivalent units.

age (*id_agemax*) - 40-character field for the maximum geological age assigned to the stratigraphic name in the article. As with the *agemax* field in the Stratigraphic Names Form, a LIST function is available for choosing geological age terms from the GEOTIME table of the STRATA Stratigraphic Authority Database. Whether <LIST> is used or not, all entries are verified against this table.

to (*id_agemin*) - 40-character field for the minimum geological age assigned to the stratigraphic name in the article. As with the *agemin* field in the Stratigraphic Names Form, a LIST function is available for choosing geological age terms from the GEOTIME table of the STRATA Stratigraphic Authority Database. Whether <LIST> is used or not, all entries are verified against this table.

Article and Stratnames Form

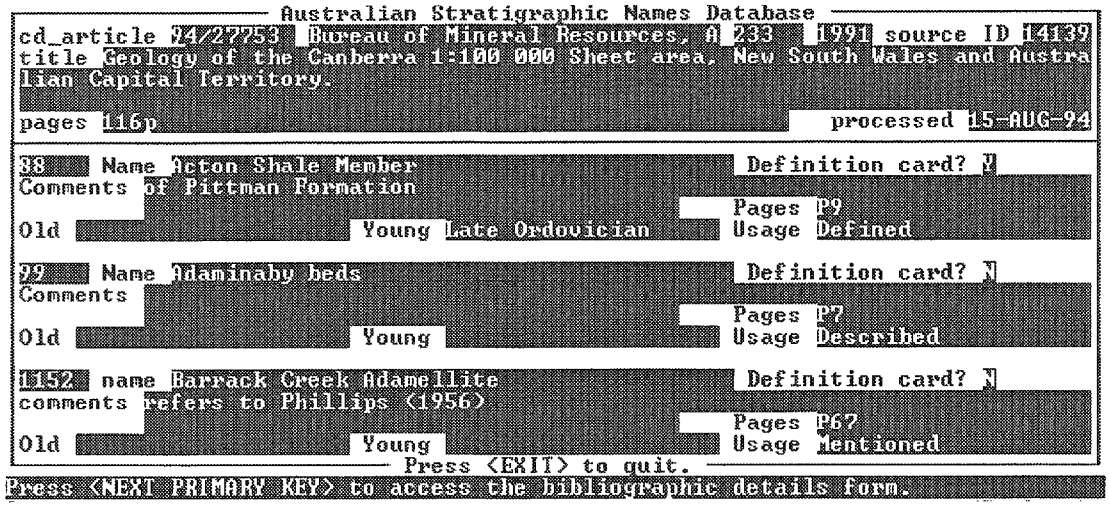


Figure 8. The Article and Stratnames Form.

This form is mainly used for entering stratigraphic names' usage details for articles which have already been entered through the Bibliographic Details Form. It can also be used to correct mistakes in the article title or the pagination. Query for a particular article by its article ID, *cd_article*, then press <NEXT BLOCK> to enter the stratigraphic names details. The following fields make up the top part of the form:

cd_article (*cd_article*) - as in the Bibliographic Details Form. Query for an article by entering its article ID (*cd_article*) and then pressing <EXECUTE QUERY>. The full details of the article can be displayed in the Bibliographic Details Form by pressing <NEXT PRIMARY KEY> when the cursor is in this field.

(the fields publication name, volume/part number, year of publication are display-only.)

source ID (*id_source*) - as in the Bibliographic Details Form.

title (*tx_title*) - as in the Bibliographic Details Form.

pages (*name_page*) - as in the Bibliographic Details Form.

processed (*dt_process*) - as for 'entry date' in the Bibliographic Details Form.

The bottom part of the form corresponds to the STRATNAME_ARTICLE table with the following fields:

(*stratno*) - as in the Stratigraphic Names Form. It can only be entered in query mode.

Name - this field does not belong to the STRATNAME_ARTICLE table, but it has been set up for retrieving stratigraphic names from the STRATNAMES table: enter part of the stratigraphic name to be attached to the article displayed at the top of the form, and press <LIST>. This takes the user into a form based on the view called STRATLIST that has been specifically set up for this purpose (Figure 3). All the variations of the name queried are displayed, together with their identifying number (*stratno*), the state(s) they occur in and the status description (*statusname*). This form has been set up to mimic the LIST function:

data cannot be changed in this form, but the correct name can be selected from the list by placing the cursor on it and pressing <COMMIT>. The selected name together with its number and the definition card (*card*) information is inserted into the Article and Stratnames Form. Check the entry in the Stratlist Form to make sure that the spelling is exactly the same as in the article, and also that the name has the same state displayed with it as in the article. If there is no matching entry in the Stratlist Form then use <EXIT> to return to the Article and Stratnames Form without selecting a name. New names have to be added through the Stratigraphic Names Form which can be accessed straight away, or at some later time, by pressing <NEXT PRIMARY KEY>. When the new name has been committed in the Stratigraphic Names Form, use <DUPLICATE FIELD> to select the name and return to the Article and Stratnames Form. You can then continue entering the rest of the details.

Definition card? (*card*) - displayed only, from the STRATNAMES table.

Comments (*tx_cmnts*) - as in the Stratnames and Article Details Form.

Pages (*nm_page*) - as in the Stratnames and Article Details Form.

Old (*id_agemax*) - as in the Stratnames and Article Details Form.

Young (*id_agemin*) - as in the Stratnames and Article Details Form.

Usage - lookup value of the description (*statusname*) corresponding to the value in the *status* field (not displayed). There is a LIST function available: type in part of the description and press <LIST> to retrieve the full value/s available. Pressing <LIST> without anything in the field retrieves all available values which are a subset of those shown in the 'status' list in the Stratigraphic Names Form. They include: Redefined, Fully described, Mentioned.

After entering the details for a stratigraphic name press <COMMIT> to add the record to the database. This may also trigger some automatic updates in the STRATNAMES table such as *defref* and *status*. Users are notified of status changes and must <OK> the message before they can continue. The cursor then moves into the next record ready for calling up the next stratigraphic name.

Stratnames and References Form

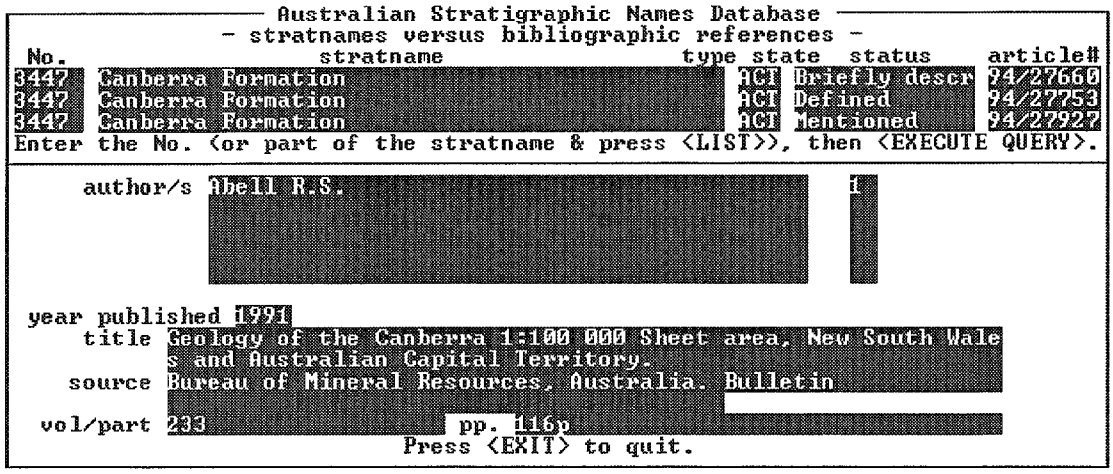


Figure 9. The Stratnames and References Form.

The Stratnames and References Form (Figure 9) is only for displaying references containing a particular stratigraphic name. No data can be entered or amended. To retrieve references for a stratigraphic name place the cursor in the number field (No. - *stratno*) and enter the identifying number for the stratname (if this is known), otherwise you must use the LIST function to select a single name: enter part of the stratigraphic name into the *stratname* field and press <LIST>; select the appropriate name from the list and then press <EXECUTE QUERY>. All references that include that stratigraphic name will be retrieved in ascending *cd_article* order (generally the oldest references will appear first). Scroll through the records with the <DOWN> arrow key.

Reserved Names Entry Form

The Reserved Names Entry Form is only for reservation of names by data entry staff and is not available to the public. Field geologists should ask for stratigraphic names to be reserved for them, before publication, to notify their intentions and to discourage others from introducing the same name for different units. Only a few of the fields in the Stratigraphic Names Form (covering the entire range of columns in the STRATNAMES table) are needed to reserve a name. Also, a field geologist often requests the reservation of several new names at a time. To speed up entry of reserved names into the STRATNAMES table, this separate multi-record form was set up. Unlike most of the other forms, it does not start up in query mode, and can only be used to query the database for stratigraphic names that have a status of 7 (= Reserved). The form contains the following fields:

No. (*stratno*) - as in the Stratigraphic Names Form.

name (*stratname*) - as in the Stratigraphic Names Form. Pressing <NEXT PRIMARY KEY> takes the user into that form and displays all fields.

resdate (*resdate*) - as in the Stratigraphic Names Form.

originator (*originator*) - as in the Stratigraphic Names Form.

comments (*comments*) - as in the Stratigraphic Names Form.

current? (*iscurrent*) - as in the Stratigraphic Names Form.

status (*status*) - set to 7 for 'Reserved' which is displayed in the next field when a new name is being entered. This field cannot be changed.

category (*category*) - set to 8 for 'Reserved' which is displayed in the next field when a new name is being entered. The category can be changed.

entry date (*entrydate*) - as in the Stratigraphic Names Form.

by (*enteredby*) - as in the Stratigraphic Names Form.

modification date (*moddate*) - as in the Stratigraphic Names Form.

by (*modby*) - as in the Stratigraphic Names Form.

card? (*card*) - as in the Stratigraphic Names Form.

approved? (*approved*) - as in the Stratigraphic Names Form.

date (*apprdate*) - as in the Stratigraphic Names Form.

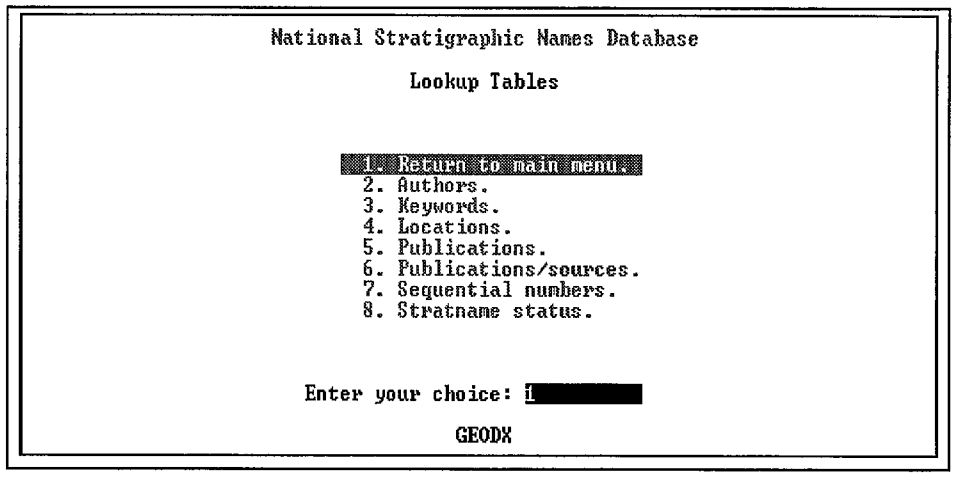
by (*apprby*) - as in the Stratigraphic Names Form.

(*state*) - as in the Stratigraphic Names Form but shows only the State(s) for the reserved name that the cursor is on.

Lookup tables

Simple data entry/retrieval forms were designed for the database tables that function as lookup or authority lists. Some, like the Authors and Keywords Forms, can be called up from the Bibliographic Details Form when new authors or keywords have to be added. Other tables function solely as lookup lists, records can only be changed by the system owner - for example the STRATSTATUS table - but for information purposes a form for stratname status and categories has been set up which shows all possible status and category values. Similarly, the Sequential Numbers Form can provide an overview of numbers of records in tables AUTHOR, KEYWORD, PUBLICATION, SOURCE and STRATNAMES ('STRATNO').

The Lookup Tables Menu shows which forms are available:



Two tables from STRATA, the Stratigraphic Authority Database, are used as authority lists in the Stratigraphic Names Database: GEOPROVS (Geological Provinces) and GEOTIME (Geological Time Scale). Forms for querying the contents of those two tables, and also some other small lookup tables, can be accessed through the menu system for AGSO's Field and Laboratory Databases: at the AViiON prompt, type ***geol*** to call up their main menu (see Ryburn *et al.*, 1995a).

7. SQL*PLUS

SQL*Plus is Oracle's extended **S**tructured **Q**uery **L**anguage which can be used by anyone with an Oracle logon name by setting the Oracle environment (= typing ***setoraprod***) and typing ***sqlplus*** at the AViiON prompt, then supplying logon name and password at the respective prompts. Option 4 on the Main Menu facilitates entry into SQL*Plus without the user having to supply logon and password again (they were already supplied when entering the menu).

The basic command for retrieving data from an Oracle database is:

select *columnname* from *owner.tablename*;

For example, to retrieve all the rank terms from the STRATRANK view of the RANKSYNONYMS table, type

select rankno, rankname from geodx.stratrank;

To impose conditions on the retrieval, use the ***where*** clause: for instance, to find out how many stratigraphic names have been superseded (*status* = 9), type

select count(*) from geodx.stratnames
where status = 9;

How many of those superseded names have had the name to be used in place of it added to their record:

select count(*) from geodx.stratnames
where status = 9
and useno is not null;

Data in more than one table can be retrieved by a so-called ***join***:

select stratname, state from geodx.stratnames, geodx.stratstates
where stratnames.stratno = stratstates.stratno
and stratname like 'Z%'
and state = 'NSW';

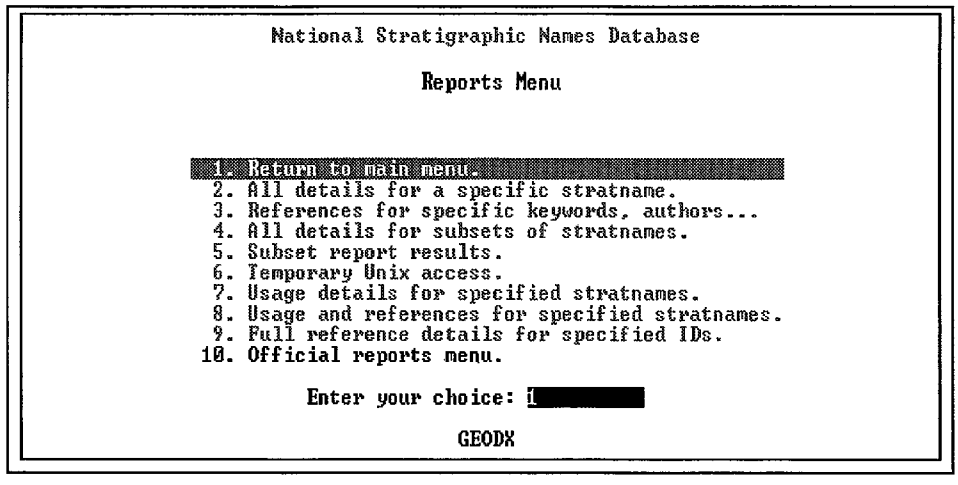
(all the stratigraphic names in the database that start with 'Z' and occur in NSW).

Lenz et al. (1993) give further examples of SQL scripts which can be adapted to the Stratigraphic Names Database.

8. REPORT PROGRAMS

Several report programs for retrieving information on different aspects of the database in file format or hard copy have been written, some as part of the data checking procedure, others for dissemination of information to the various users. In recent times some generic report programs have been developed with the option of supplying parameters as query conditions from menus which makes for much more flexible reporting facilities.

The Reports Menu (see diagram below) lists the currently available reports. Use <HELP> for a short description of the purpose of each report, and to find out what the result file is called and which directory it is created in.



The report programs prompt the user for entry of query conditions, eg. specific stratigraphic names or article IDs (*cd_article*). A certain degree of familiarity with the data in GEODX will make the retrieval a more complete mirror of the information contained in the database. Stratigraphic Index staff are always willing to help users specify their retrievals, and even do more complicated searches of the database for them. Staff may sometimes be able to suggest another, more specific report that will retrieve the requested information. Printouts from some of these reports are attached as Appendix E: Sample Report Output.

Options 3 and 4 are the generic reports for retrieving specific references or information on stratigraphic names, with the option of adding references, respectively (see Figures 10 and 11).

The selection menu for references (Figure 10) can be used to retrieve all publications by a certain author, with reference to a specified map sheet, a particular keyword, geological province or any combination of the above:

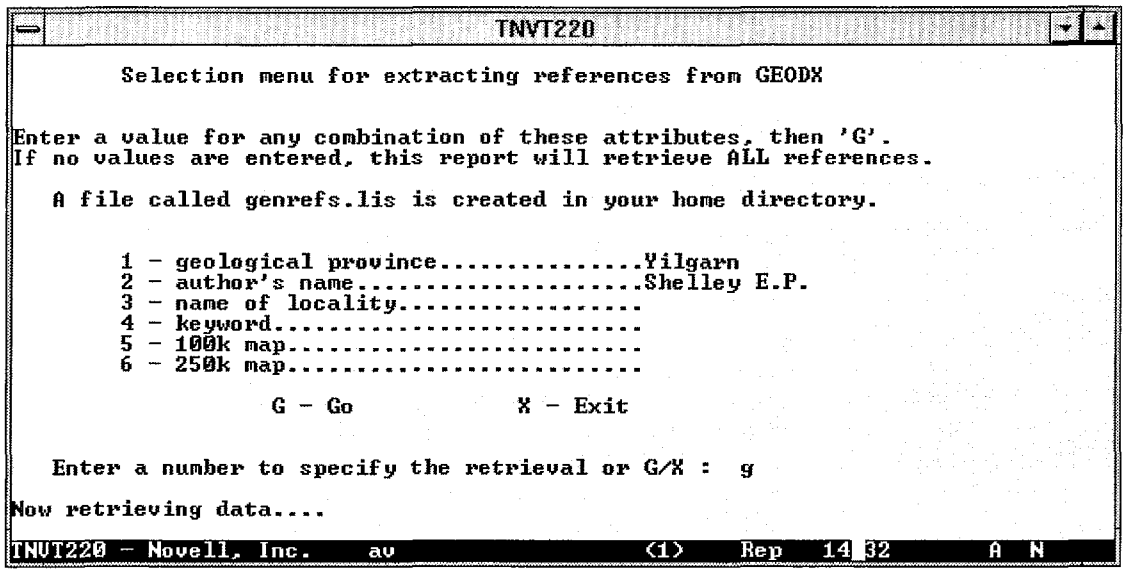


Figure 10. The selection menu for the references report.

Note: This report will only pick up the references that have actually been indexed on the particular terms entered for the query, eg. map sheet numbers are not added if the location diagram or description is poor (therefore, be wary about using map sheet numbers for retrievals).

The selection menu for the stratigraphic names report (Figure 11) allows for provision of parameters like reservation date, status and/or State before retrieving subsets of all names in the database, with or without details of their usage and references (8, 9):

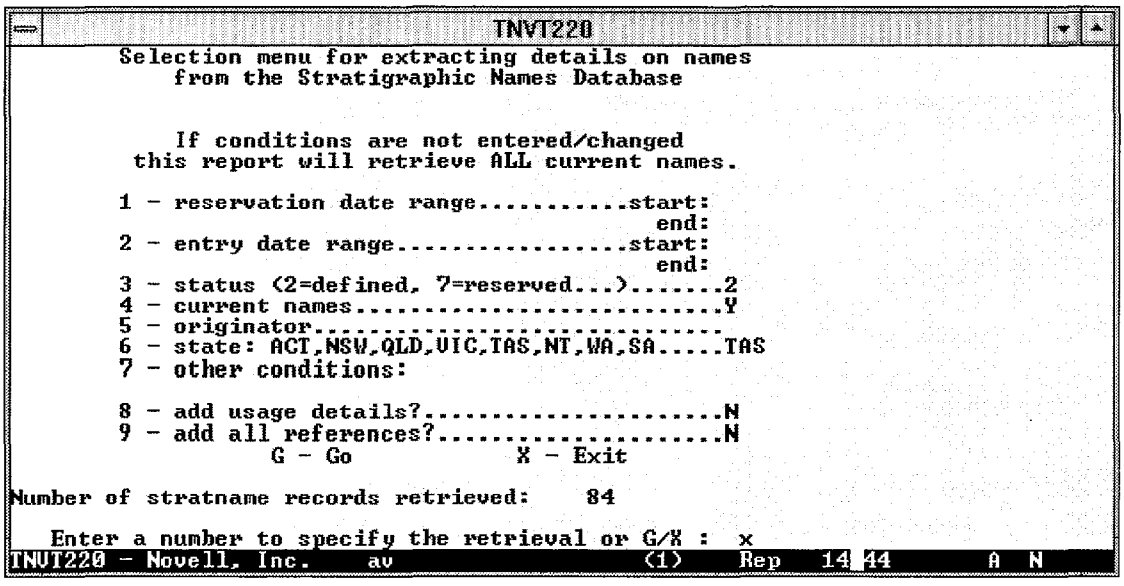


Figure 11. The selection menu for the stratigraphic names report.

This report can potentially retrieve a very large file - **all** the information on **all** the stratigraphic names in the database - so it is not created in the user's home directory, but in the ***/scratch*** directory on the AViiON database server. Instructions on how to

get to this directory are contained in the message available after pressing the <HELP> key from the Reports Menu.

Option 5 on the Reports Menu (page 29) allows the user to view the results of this retrieval (Figure 12). A Unix script is executed that displays the contents of the file page by page (with the Unix ***more*** command) and then prompts the user to ***type any key to continue*** and return to the Reports Menu.

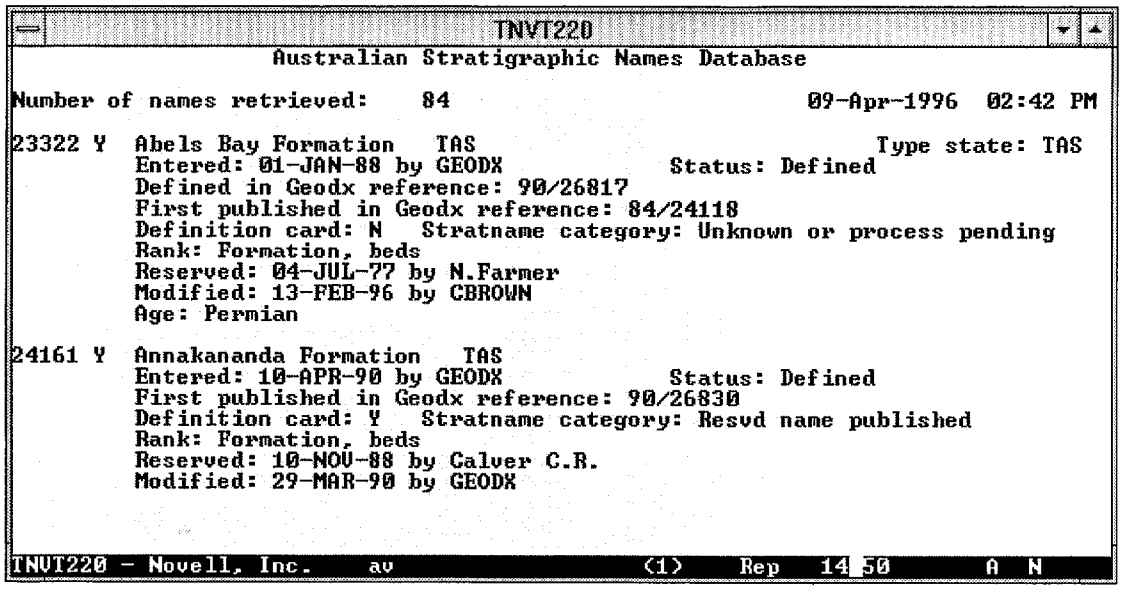


Figure 12. Results of the stratigraphic names report.

Option 6 on the Reports Menu takes the user temporarily into the working directory where Unix commands can be executed.

A number of other reports are available for Stratigraphic Index staff only, for 'official' and 'database checking' purposes (Reports Menu options 10 and 11). Some of these can retrieve very large data sets, and the resulting files are therefore created in the AViiON's ***/scratch*** directory. The official reports have to be run on a regular basis, and their outputs are distributed as hard copies or ASCII files to the various client organisations such as State Geological Surveys, universities, exploration companies, and the Stratigraphic Names Committee.

Stratigraphic Names on the WWW

In 1995, when the potential of the World Wide Web for broad dissemination of information became apparent, a decision was made to make some of the public databases within AGSO available on the Web. The Stratigraphic Names Database was the first AGSO database to go live ('warts and all') on this medium, in July 1995. The ***geology*** link on AGSO's Home Page (URL **http://www.agso.gov.au**) provides access to the Stratigraphic Names Database (see also Ryburn et al., 1995b).

So far there is only one procedure set up to query the Stratigraphic Names Database, namely by entering part or all of a particular name and requesting the interrogation of table STRATNAMES (Figure 13). The resulting Web page shows all the information contained in that table for the particular name and its variations and derivations with links to the information on other units which are related to the stratigraphic unit/s retrieved (Figure 14). The text from Web pages can be copied to documents on the user's computer or sent to the user's printer if required.

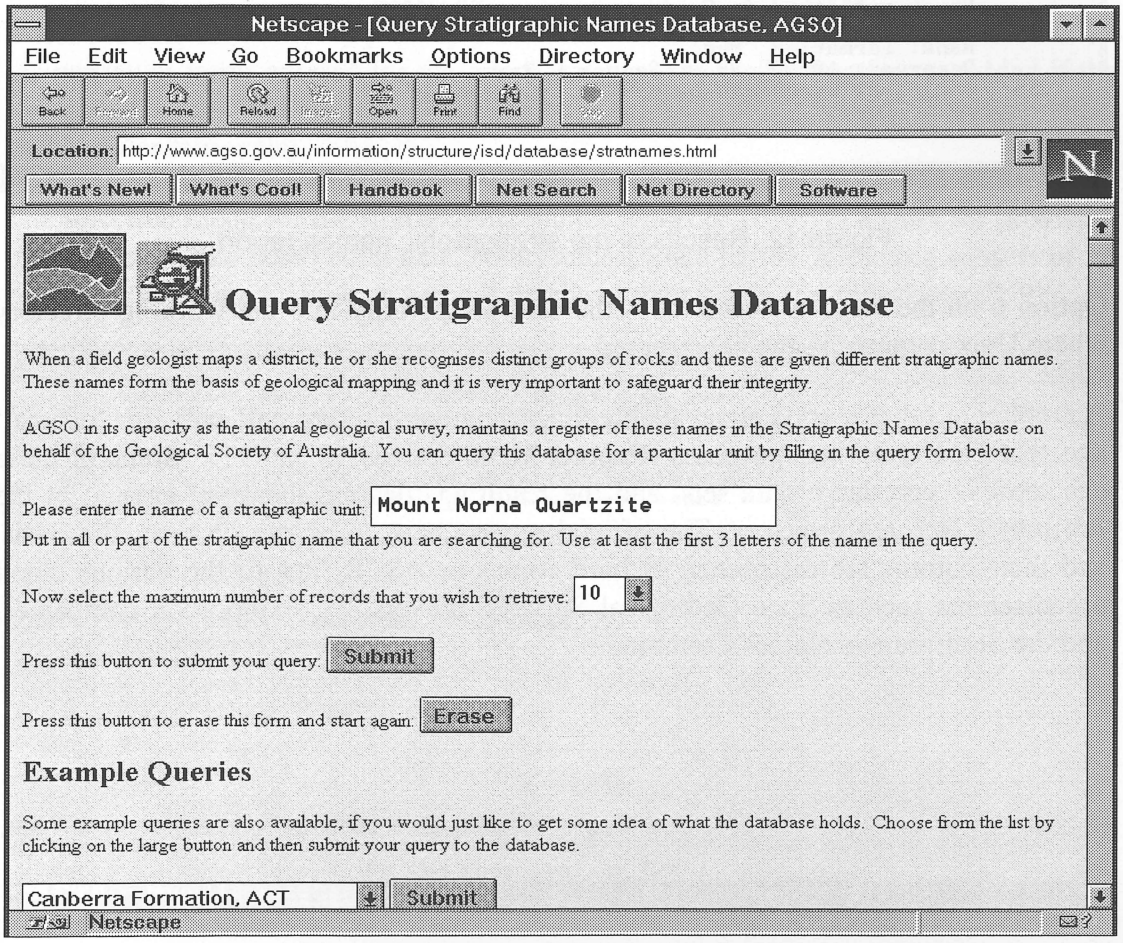
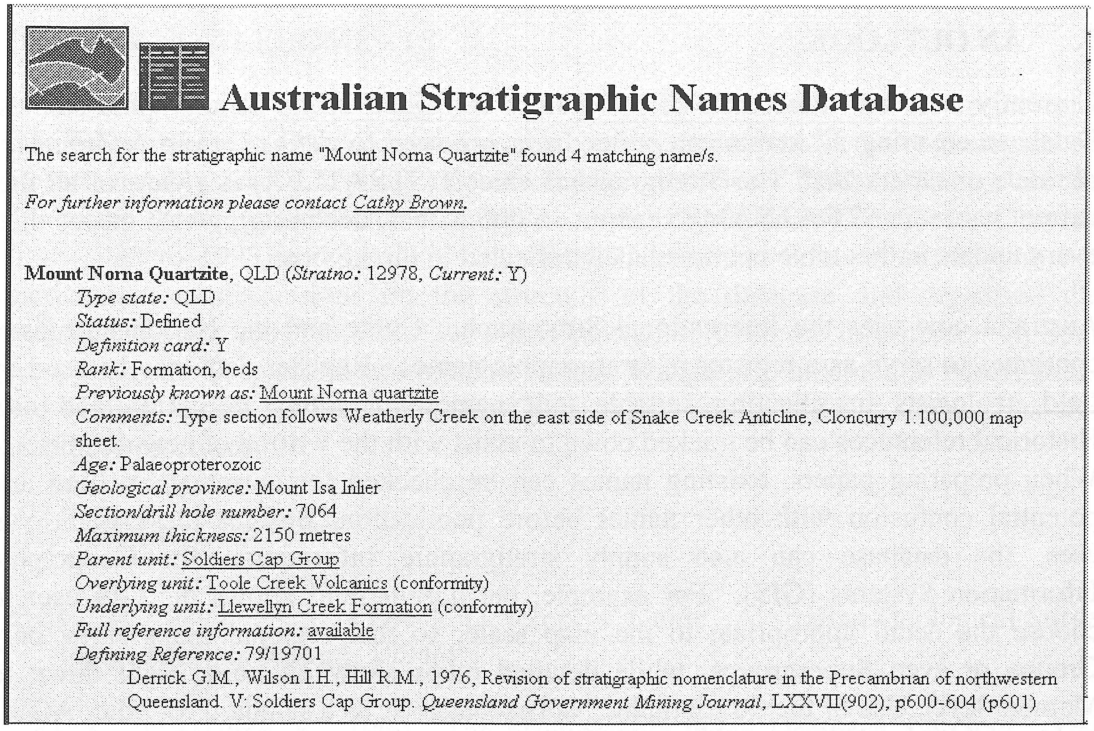


Figure 13. Stratigraphic names query screen on the WWW.



Australian Stratigraphic Names Database

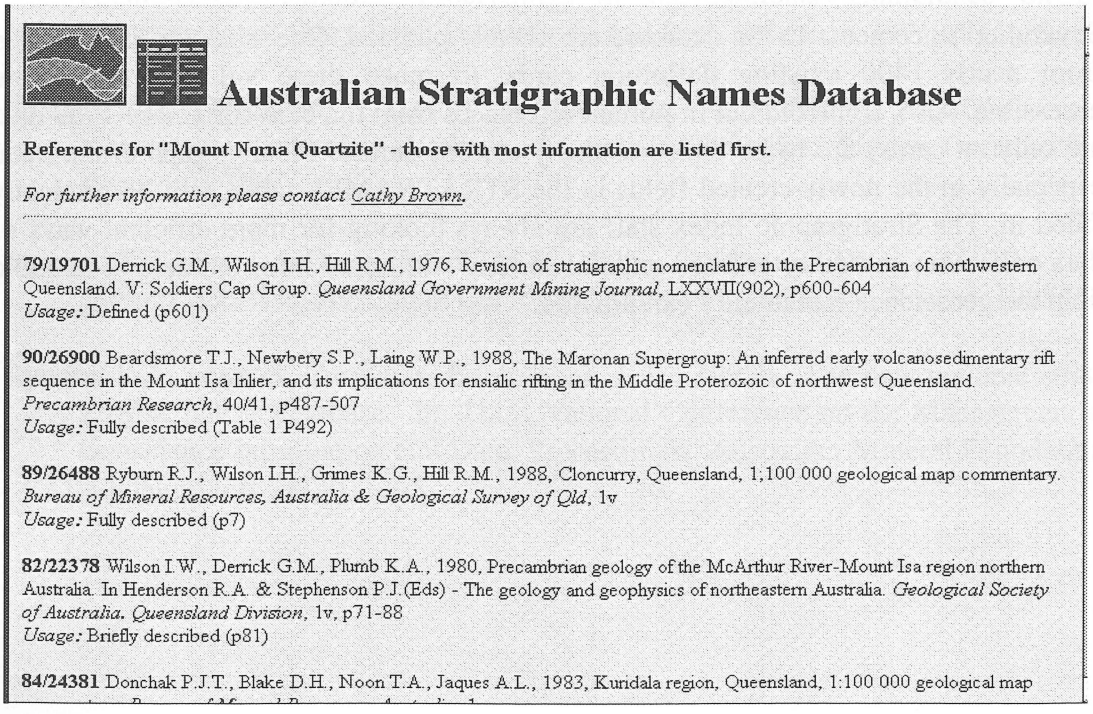
The search for the stratigraphic name "Mount Norna Quartzite" found 4 matching name/s.

For further information please contact Cathy Brown.

Mount Norna Quartzite, QLD (*Stratno:* 12978, *Current:* Y)
Type state: QLD
Status: Defined
Definition card: Y
Rank: Formation, beds
Previously known as: Mount Norna quartzite
Comments: Type section follows Weatherly Creek on the east side of Snake Creek Anticline, Cloncurry 1:100,000 map sheet.
Age: Palaeoproterozoic
Geological province: Mount Isa Inlier
Section/drill hole number: 7064
Maximum thickness: 2150 metres
Parent unit: Soldiers Cap Group
Overlying unit: Toole Creek Volcanics (conformity)
Underlying unit: Llewellyn Creek Formation (conformity)
Full reference information: available
Defining Reference: 79/19701
Derrick G.M., Wilson I.H., Hill R.M., 1976, Revision of stratigraphic nomenclature in the Precambrian of northwestern Queensland. V: Soldiers Cap Group. *Queensland Government Mining Journal*, LXXVII(902), p600-604 (p601)

Figure 14. Stratigraphic name information retrieved on the WWW.

Another link via the word **available** after the heading *Full reference information* retrieves all the references in the database which contain information on the particular stratigraphic name on the screen (Figure 15). Other Web pages with information on the database are in preparation.



Australian Stratigraphic Names Database

References for "Mount Norna Quartzite" - those with most information are listed first.

For further information please contact Cathy Brown.

79/19701 Derrick G.M., Wilson I.H., Hill R.M., 1976, Revision of stratigraphic nomenclature in the Precambrian of northwestern Queensland. V: Soldiers Cap Group. *Queensland Government Mining Journal*, LXXVII(902), p600-604
Usage: Defined (p601)

90/26900 Beardsmore T.J., Newbery S.P., Laing W.P., 1988, The Maronan Supergroup: An inferred early volcanosedimentary rift sequence in the Mount Isa Inlier, and its implications for ensialic rifting in the Middle Proterozoic of northwest Queensland.
Precambrian Research, 40/41, p487-507
Usage: Fully described (Table 1 P492)

89/26488 Ryburn R.J., Wilson I.H., Grimes K.G., Hill R.M., 1988, Cloncurry, Queensland, 1;100 000 geological map commentary.
Bureau of Mineral Resources, Australia & Geological Survey of Qld, 1v
Usage: Fully described (p7)

82/22378 Wilson I.W., Derrick G.M., Plumb K.A., 1980, Precambrian geology of the McArthur River-Mount Isa region northern Australia. In Henderson R.A. & Stephenson P.J.(Eds) - The geology and geophysics of northeastern Australia. *Geological Society of Australia. Queensland Division*, 1v, p71-88
Usage: Briefly described (p81)

84/24381 Donchak P.J.T., Blake D.H., Noon T.A., Jaques A.L., 1983, Kuridala region, Queensland, 1:100 000 geological map

Figure 15. Reference list retrieved on the WWW.

9. AN OUTLOOK

Currently there are more than 28 000 names contained in the Stratigraphic Names Database covering all status categories from *reserved* to *defined*, from *informal* to *obsolete* or *superseded*. The Stratigraphic Lexicon (STRATLEX) is a view of all the current names in STRATNAMES (about 15 000 names, declining), which means that every update in that table is immediately reflected in the Lexicon.

Australia now uses the International Stratigraphic Guide and the National Register continues to serve as a register of stratigraphic names. Register data may be used by field geologists in selecting suitable unit names for future definition and use. Historical references can be tracked down to assist with the writing of new definitions. When preparing papers, existing names can be checked for currency, spelling and potential confusion with other names before publication. Besides these traditional uses, the database can also supply stratigraphic information for Geographic Information Systems (GIS). For example, the *parent* field allows the GIS user to choose the detail appropriate to the map scale, so that regional maps show only Groups or even Supergroups, while detailed maps show all units, right down to Member level. Use of the Stratigraphic Names Database as a standard for other AGSO databases is increasing.

Variations Lists and other regular reports presently sent as hard-copy to all universities and interested individuals, the State Surveys and Stratigraphic Names Committee will be made available on the Web as soon as possible. Public access to the computer database available through the *geology* section of AGSO's World Wide Web server will be improved to enable more flexible searching of the database.

Several enhancements to the database are already planned. One is to add information from nearly 1400 existing definition cards, to make these valuable data more accessible. Also, some old but important references from the card file (1949-1969 data are only on cards) are to be added to many current names. Finally, gaps in the data, especially in the newly-created fields in the STRATNAMES table, will be gradually filled in. The Stratigraphic Index staff are always looking for more efficient ways of data collection and entry and are grateful for any additional information and tangible help the geoscience community can provide.

10. ACKNOWLEDGMENTS

The authors wish to acknowledge the work of Charlie Modrak who set up the initial GEODX database in Oracle, as well as the continuing support of many geologists and editors, notably Lesley Wyborn, Helena Basden and Geoff Bladon. Thanks are also due to the Stratigraphic Names Committee, especially to Colin Gatehouse, Convenor from 1985 to 1995, and Ian Withnall of the Queensland Subcommittee, who both participated in discussions on the structure of the database and organised data exchanges. Their contributions have significantly improved the information on South Australian and Queensland stratigraphic names. We are also indebted to Albert Brakel and Murray Hazell for reviewing this Guide. Their comments and suggestions were gratefully received.

11. BIBLIOGRAPHY

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Lenz, S.L., Ryburn, R.J. & Kucka, M., 1993. Users' Guide to AGSO's Oracle Database System. Australian Geological Survey Organisation, Record, 1993/81.

Ryburn, R.J. & Lenz, S., 1991. Geoscientific relational databases in BMR and the client-server method. Proceedings of the National Conference on the Management of Geoscience Information and Data, Adelaide, 1991, (7) 1-15.

Ryburn, R.J. & Bond, L.D., 1995. Guide to AGSOREFS, AGSO's shared bibliographic reference database. Australian Geological Survey Organisation, Record, 1995/6.

Ryburn, R.J., Bond, L.D. & Hazell, M.S., 1995a. Guide to OZROX, AGSO's field geology database. Australian Geological Survey Organisation, Record, 1995/79.

Ryburn, R.J., Lenz, S., Brown, C.E. & Bond, L.D., 1995b. The new national stratigraphic names database. In: Third National Conference on the Management of Geoscience Information and Data, Proceedings. Australian Mineral Foundation, Adelaide, July 18-20, 1995.

APPENDIX A: Database Definitions

Following are the definition statements for the Stratigraphic Names Database:

```
rem     *****create the data tables and lookup tables*****
create table GEODX.PUBLICATION (
      ID_PUBLICATION      number   ( 5 ) not null,
      NAME_PUBLICATION varchar2  ( 100 ) not null)
tablespace TBSPC storage (initial  106496  next  21504);

create table GEODX.AUTHOR (
      ID_AUTHOR           number   ( 5 ) not null,
      NAME_AUTHOR         varchar2  ( 60 ) not null)
tablespace TBSPC storage (initial  618496  next  205824);

create table GEODX.ARTICLE (
      TX_TITLE            varchar2  ( 240 ) not null,
      ID_SOURCE           number( 5 ) not null,
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NAME_PAGE           varchar2  ( 50 ),
      DT_PROCESS          date )
tablespace TBSPC storage (initial 5124096  next  1025024);

create table GEODX.ARTICLE_100K (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NO_100K_SHEET       varchar2  ( 4 ) not null)
tablespace TBSPC storage (initial 147456  next   21504);

create table GEODX.ARTICLE_250K (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NO_1M_SHEET         varchar2  ( 4 ) not null,
      NO_250K_SHEET       number   ( 2 ) not null)
tablespace TBSPC storage (initial  823296  next  205824);

create table GEODX.ARTICLE_AUTHOR (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      ID_AUTHOR           number   ( 5 ) not null,
      ORDER_SEQUENCE      number   ( 2 ) not null)
tablespace TBSPC storage (initial 1232896  next  205824);

create table GEODX.ARTICLE_GEOLPROV (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NM_PROVINCE         varchar2  ( 85 ) not null)
tablespace TBSPC storage (initial  618496  next  205824);

create table GEODX.ARTICLE_PLACE (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NM_PLACE            varchar2  ( 40 ) not null,
      ID_LOCALITY         number )
tablespace TBSPC storage (initial  823296  next  205824);

create table GEODX.ARTICLE_STATE (
      CD_ARTICLE          varchar2  ( 9 ) not null,
      NM_STATE            varchar2  ( 6 ) not null)
tablespace TBSPC storage (initial  618496  next  205824);

create table GEODX.BMRPUB (
      ID_SOURCE           number   ( 5 ) not null,
      NO_PRICE            number   ( 7, 2 ),
      CD_STATUS           varchar2  ( 2 ),
      DESC_COLLATN        varchar2  ( 40 ),
      DT_RELEASE          varchar2  ( 4 ),
      TX_ANNOTN           varchar2  ( 240 ),
      NM_OUTLETS          varchar2  ( 30 ) )
tablespace TBSPC storage (initial 618496  next  205824);
```

```
create table GEODX.KEYWORD (
    ID_KEYWORD          number   ( 5 ) not null,
    NAME_KEYWORD        varchar2 ( 40 ) not null)
tablespace TBSPC storage (initial 106496 next 21504);

create table GEODX.KEYWORD_ARTICLE (
    CD_ARTICLE          varchar2 ( 9 ) not null,
    ID_KEYWORD          number   ( 5 ) not null)
tablespace TBSPC storage (initial 1847296 next 205824);

create table GEODX.RANKSYNONYMS (
    RANKNO              number   ( 1 ) not null,
    RANKNAME            varchar2 ( 16 ) not null,
    RANKTYPE            varchar2 ( 1 ) )
tablespace TBSPC storage (initial 24576 next 21504);

create table GEODX.SEQNOS (
    TABLENAME           varchar2 ( 20 ) not null,
    MAXSEQNO            number )
tablespace TBSPC storage (initial 14336 next 11264);

create table GEODX.SOURCE (
    ID_SOURCE           number   ( 5 ) not null,
    ID_PUBLICATION      number   ( 5 ) not null,
    NO_VOLPART          varchar2 ( 20 ),
    DT_PUBLICATION      number   ( 4 ) not null)
tablespace TBSPC storage (initial 618496 next 205824);

create table GEODX.STRATSTATUS (
    STATUSTYPE          varchar2 ( 1 ) not null,
    STATUS              number   ( 2 ) not null,
    STATUSNAME          varchar2 ( 50 ) not null)
tablespace TBSPC storage (initial 24576 next 11264);

create table GEODX.STRATNAMES (
    STRATNO             number   ( 5 ) not null,
    GEODXNO             number   ( 5 ),
    UNITNO              number   ( 5 ),
    STRATNAME           varchar2 ( 50 ) not null,
    TYPESTATE           varchar2 ( 3 ),
    ENTRYDATE           date not null,
    ENTEREDBY           varchar2 ( 8 ) not null,
    APPROVED            varchar2 ( 1 ),
    APPRDATE            date,
    APPRBY              varchar2 ( 8 ),
    RANK                number   ( 1 ),
    STATUS              number   ( 2 ) not null,
    CATEGORY            number   ( 2 ) not null,
    CARD                varchar2 ( 1 ) not null,
    ISCURRENT           varchar2 ( 1 ) not null,
    MODDATE             date,
    MODBY               varchar2 ( 8 ),
    ORIGINATOR          varchar2 ( 80 ),
    RESDATE             date,
    AGEMIN              number   ( 4 ),
    AGEMAX              number   ( 4 ),
    GEOPROVNO           number   ( 5 ),
    SECTHOLENO          number   ( 6 ),
    MAXTHICKNESS        number   ( 7, 2 ),
    OVERLYING           number   ( 5 ),
    OVERREL             number   ( 3 ),
    UNDERLYING          number   ( 5 ),
    UNDERREL            number   ( 3 ),
    FIRSTREF            varchar2 ( 9 ),
```

```
    DEFREF              varchar2  ( 9 ),
    PARENT              number    ( 5 ),
    PREVNO              number    ( 5 ),
    USENO               number    ( 5 ),
    COMMENTS            varchar2  ( 255 ),
    ORIGNO              number    ( 5 ),
    SITEID              varchar2  ( 16 ) )
tablespace TBSPC storage (initial 4198400  next  513024);

create table GEODX.STRATNAME_ARTICLE (
    CD_ARTICLE          varchar2  ( 8 ) not null,
    NM_PAGE             varchar2  ( 20 ) not null,
    ID_AGEMIN           varchar2  ( 40 ),
    ID_AGEMAX           varchar2  ( 40 ),
    TX_CMNTS            varchar2  ( 100 ),
    STRATNO             number    ( 5 ) not null,
    STATUS              number    ( 2 ) not null)
tablespace TBSPC storage (initial  9220096  next  1025024);

create table GEODX.STRATSTATES (
    STRATNO             number    ( 5 ) not null,
    STATES_ID           varchar2  ( 50 ),
    STATE               varchar2  ( 3 ) not null)
tablespace TBSPC storage (initial 3588096  next  513024);

rem     *****create all the views*****

create force view AUTHORS (CD_ARTICLE, NAME_AUTHOR, ORDER_SEQUENCE) as
    select cd_article,name_author,order_sequence from author,article_author
    where author.id_author = article_author.id_author ;

create force view AUTHOR_YEAR (ID_AUTHOR, NAME_AUTHOR, ORDER_SEQUENCE,
    CD_ARTICLE , YEAR) as
    select author.id_author,name_author,order_sequence,cd_article,year
    from author, article_author, bibliog
    where author.id_author=article_author.id_author
    and article_author.cd_article=bibliog.code;

create force view BIBLIOG (CODE, TITLE, PUBLICATION, VOL_PART, PAGE, YEAR) as
    select cd_article,tx_title,name_publication,no_volpart,name_page, dt_publication
    from geodx.article,geodx.publication,geodx.source
    where publication.id_publication=source.id_publication
    and source.id_source=article.id_source ;

create force view GEODX100 (MAPNO, FIRST_AUTHOR, YEAR, TITLE,
    PUBLICATION, VOL_PART) as
    select no_100k_sheet mapno,name_author first_author,year,title,publication,vol_part
    from geodx.article_100k,geodx.authors,geodx.bibliog
    where article_100k.cd_article = bibliog.code
    and order_sequence = 1
    and bibliog.code = authors.cd_article
    and (publication like 'B%M%R%' or publication like 'A%G%S%O%');

create force view GEODX250 (MAPNO, FIRST_AUTHOR, YEAR, TITLE,
    PUBLICATION, VOL_PART) as
    select no_1m_sheet||lpad(to_char(no_250k_sheet),2,'0') mapno,
    name_author first_author,year,title,publication,vol_part
    from geodx.article_250k,geodx.authors,geodx.bibliog
    where article_250k.cd_article = bibliog.code
    and order_sequence = 1
    and bibliog.code = authors.cd_article
    and (publication like 'B%M%R%' or publication like 'A%G%S%O%');
```

```
create force view STRATLEX (UNITNO, UNITNAME, RANK, STATUS, CARD, CATEGORY,
AGE1, AGE2, GEOLPROV, COMMENTS, TYPESTATE, PARENT, OVERLYING, OVEREL,
UNDERLYING, UNDEREL, DEFREF, ENTRYID, ENTRYDATE, UPDATEID,
LASTUPDATE, SITEID, ORIGNO, SECTHOLENO, MAXTHICKNESS, ISCURRENT) as
        select stratno unitno, stratname unitname, rank, status, card, category, agemax age1,
        agemin age2, geoprovno geolprov, comments, typestate, parent, overlying, overrel overel,
        underlying, underrel underel, defref, enteredby entryid, entrydate, modby updateid,
        moddate lastupdate, siteid, origno, sectholeno, maxthickness, iscurrent
        from geodx.stratnames where iscurrent = 'Y';

create force view STRATLIST (STRATNO, STRATNAME, STATUSNAME, STATE) as
        select stratnames.stratno,stratname,statusname,state
        from geodx.stratnames,geodx.stratstatus,geodx.stratstates
        where stratnames.status = stratstatus.status
        and statustype = 'S'
        and stratstates.stratno = stratnames.stratno;

create force view STRATRANK (RANKNO,RANKNAME) as
        select rankno, rankname from ranksynonyms where ranktype = 'R';

rem     *****create the indexes*****

create UNIQUE index  GEODX.IND_ARTICLE on GEODX.ARTICLE (CD_ARTICLE)
tablespace INDXC storage (initial 630784  next 105472);

create UNIQUE index  GEODX.IND_ARTICLE_01
on GEODX.ARTICLE (ID_SOURCE , CD_ARTICLE )
tablespace INDXC storage (initial 778240  next 130048);

create UNIQUE index  GEODX.IND_ARTICLE_100K
on GEODX.ARTICLE_100K (CD_ARTICLE, NO_100K_SHEET )
tablespace INDXC storage (initial 225280  next 37888);

create UNIQUE index  GEODX.IND_ARTICLE_250K
on GEODX.ARTICLE_250K (CD_ARTICLE, NO_1M_SHEET, NO_250K_SHEET)
tablespace INDXC storage (initial  901120  next 150528);

create index  GEODX.IND_ARTICLE_250K_03
on GEODX.ARTICLE_250K (NO_1M_SHEET, NO_250K_SHEET)
tablespace INDXC storage (initial 643072  next 107520);

create UNIQUE index  GEODX.IND_ARTICLE_AUTHOR
on GEODX.ARTICLE_AUTHOR (CD_ARTICLE, ID_AUTHOR)
tablespace INDXC storage (initial 1282048  next 214016);

create index  GEODX.IND_ARTICLE_AUTHOR_02
on GEODX.ARTICLE_AUTHOR (ID_AUTHOR)
tablespace INDXC storage (initial 851968  next 142336);

create UNIQUE index  GEODX.IND_ARTICLE_GEOLPROV
on GEODX.ARTICLE_GEOLPROV (CD_ARTICLE, NM_PROVINCE)
tablespace INDXC storage (initial  716800  next 119808);

create UNIQUE index  GEODX.IND_ARTICLE_PLACE
on GEODX.ARTICLE_PLACE (CD_ARTICLE, NM_PLACE)
tablespace INDXC storage (initial 1085440 next 181248);

create UNIQUE index  GEODX.IND_ARTICLE_STATE
on GEODX.ARTICLE_STATE (CD_ARTICLE, NM_STATE)
tablespace INDXC storage (initial  729088  next  121856);

create UNIQUE index  GEODX.IND_AUTHOR on GEODX.AUTHOR (NAME_AUTHOR)
tablespace INDXC storage (initial 280576  next  56320);

create UNIQUE index  GEODX.IND_AUTHOR_01on GEODX.AUTHOR (ID_AUTHOR)
tablespace INDXC storage (initial  212992  next  35840);
```

```
create index  GEODX.IND_BMRPUB on GEODX.BMRPUB (ID_SOURCE)
tablespace INDXC storage (initial 176128  next 29696);

create UNIQUE index  GEODX.IND_KEYWORD on GEODX.KEYWORD (NAME_KEYWORD)
tablespace INDXC storage (initial 106496  next  21504);

create UNIQUE index  GEODX.IND_KEYWORD_02 on GEODX.KEYWORD (ID_KEYWORD)
tablespace INDXC storage (initial  65536  next 13312);

create UNIQUE index  GEODX.IND_KEYWORD_ARTICLE
on GEODX.KEYWORD_ARTICLE (CD_ARTICLE, ID_KEYWORD)
tablespace INDXC storage (initial 2424832  next 404480);

create index  GEODX.IND_KEYWORD_ARTICLE_02
on GEODX.KEYWORD_ARTICLE (ID_KEYWORD)
tablespace INDXC storage (initial 1601536  next 267264);

create index  GEODX.IND_LOCALITY on GEODX.ARTICLE_PLACE (ID_LOCALITY)
tablespace INDXC storage (initial  51200  next  21504);

create index  GEODX.IND_PLACE on GEODX.ARTICLE_PLACE (NM_PLACE)
tablespace INDXC storage (initial  815104  next 136192);

create UNIQUE index  GEODX.IND_PUBLICATION
on GEODX.PUBLICATION (NAME_PUBLICATION)
tablespace INDXC storage (initial  77824  next 13312);

create UNIQUE index  GEODX.IND_PUBLICATION_02
on GEODX.PUBLICATION (ID_PUBLICATION)
tablespace INDXC storage (initial  24576  next  21504);

create UNIQUE index  GEODX.IND_SOURCE
on GEODX.SOURCE (ID_PUBLICATION, NO_VOLPART, DT_PUBLICATION)
tablespace INDXC storage (initial  507904  next  84992);

create index  GEODX.IND_SOURCE_01on GEODX.SOURCE (NO_VOLPART)
tablespace INDXC storage (initial  372736  next  62464);

create UNIQUE index  GEODX.IND_SOURCE_02
on GEODX.SOURCE (ID_SOURCE, ID_PUBLICATION)
tablespace INDXC storage (initial  385024  next  64512);

create UNIQUE index  GEODX.IND_SOURCE_03 on GEODX.SOURCE (ID_SOURCE)
tablespace INDXC storage (initial  299008  next  50176);

create index  GEODX.IND_SOURCE_04 on GEODX.SOURCE (ID_PUBLICATION)
tablespace INDXC storage (initial  270336  next 54272);

create index  GEODX.SASTRATNO on GEODX.STRATNAME_ARTICLE ( STRATNO)
tablespace INDXC storage (initial  3076096  next 513024);

create UNIQUE index  GEODX.SASTRATNOARTNO
on GEODX.STRATNAME_ARTICLE (CD_ARTICLE, STRATNO)
tablespace INDXC storage (initial  4100096  next  513024);

create index  GEODX.SNPREVNO on GEODX.STRATNAMES (PREVNO)
tablespace INDXC storage (initial  208896  next 103424);

create UNIQUE index  GEODX.SNSTRATNAME on GEODX.STRATNAMES (STRATNAME)
tablespace INDXB storage (initial  1232896  next 205824);

create UNIQUE index  GEODX.SNSTRATNO on GEODX.STRATNAMES (STRATNO)
tablespace INDXB storage (initial  1232896  next  205824);

create index  GEODX.SNUSENO on GEODX.STRATNAMES (USENO)
tablespace INDXC storage (initial  208896  next  103424);

create index  GEODX.SSSTRATNO on GEODX.STRATSTATES (STRATNO)
tablespace INDXC storage (initial  618496  next  103424);
```

rem *****create a flat table for the hierarchy of stratigraphic names in STRATLEX (GIS usage)

The hierarchy of stratigraphic units which is reflected in the STRATNAMES table with the *parent* pointer can be confusing, and complex queries which require the retrieval of information from STRATNAMES based on the hierarchical structure are possible with SQL but take a long time. For example, a query designed to retrieve all rock samples in the OZROX.ROCKS table which are from a unit within a particular stratigraphic unit would require a statement such as:

```
select rockno from ngma.rocks
  where rocks.stratno = 26144 or (rocks.stratno in
        (select stratnames.stratno from geodx.stratnames
        start with stratnames.stratno=26144
        connect by prior stratno = parent)
  and rocks.stratno is not null);
```

This SQL statement would retrieve all rocks samples from the *Soldiers Cap Group* (*stratno* = 26144) but would take well over 60 seconds to execute on the AViiON. If the query were generalised to return, for example, all samples from a map sheet, and indicate the stratigraphic unit at Group level, then the query would take a *very* long time.

To overcome the complexity and consequent long retrieval time of such queries, a "flattened" table of the stratigraphic names hierarchy was created. This table has a one-to-one relationship with STRATLEX (ie all current names in STRATNAMES) and each record presents the parentage of the stratigraphic unit, recording the name of the Supergroup, Group, Subgroup, Formation and Member (where applicable) of each unit. Using the FLATSTRAT table the query above would become:

```
select rockno from ngma.rocks
  where rocks.stratno = 26144 or (exists
        (select * from geodx.flatstrat
        where "GROUP" = 'Soldiers Cap Group'
        and rocks.stratno = flatstrat.unitno)
  and rocks.stratno is not null);
```

which, when executed, retrieves the results instantaneously.

If you use FLATSTRAT, you should be aware that "GROUP" is a reserved word in SQL*Plus, and whenever you reference this column you must enclose it in double quotes and use upper case. The table was initially populated by running a SQL script, but is maintained by database triggers that fire whenever a record is inserted into, deleted from, or updated in STRATNAMES.

```
create table GEODX.FLATSTRAT (
    UNITNO          number   ( 5 ) not null,
    UNITNAME        varchar2  ( 64 ) not null,
    SUPERGROUP      varchar2  ( 64 ),
    GROUP           varchar2  ( 64 ),
    SUBGROUP        varchar2  ( 64 ),
    FORMATION       varchar2  ( 64 ),
    MEMBER          varchar2  ( 64 ),
    BED             varchar2  ( 64 ) )
tablespace TBSPB storage (initial 2101248  next  205824 );

alter table GEODX.FLATSTRAT
add (constraint  PK_FLATSTRAT primary key (UNITNO) using index tablespace INDXB);

alter table GEODX.FLATSTRAT
add (constraint  UK_FLATSTRAT_UNITNAME unique (UNITNAME));
```

```
rem     *****Triggers for keeping table FLATSTRAT up-to-date with changes in STRATLEX
rem     *****On-Insert trigger for STRATNAMES to maintain FLATSTRAT*****
rem     - get hierarchy chain of parent
rem     - insert current strat's FLATSTRAT record
create or replace trigger ins_flatstrat
before insert on STRATNAMES
for each row
declare
        cursor parent_cur is
        select supergroup, "GROUP", subgroup, formation, member, bed
                from flatstrat
                where unitno = :new.parent;
        ThisSuperGroup  varchar2(64);
        ThisGroup               varchar2(64);
        ThisSubGroup            varchar2(64);
        ThisFormation           varchar2(64);
        ThisMember              varchar2(64);
        ThisBed         varchar2(64);
begin
        if :new.rank is not null and :new.iscurrent = 'Y' then
--              Get parent's hierarchy
--
                if :new.parent is null then
                        ThisSuperGroup := null;
                        ThisGroup := null;
                        ThisSubGroup := null;
                        ThisFormation  := null;
                        ThisMember := null;
                        ThisBed := null;
                else
                        open parent_cur;
                        fetch parent_cur into ThisSuperGroup, ThisGroup,
                                ThisSubgroup, ThisFormation, ThisMember, ThisBed;
                        close parent_cur;
                end if;
--              Get current strat name, depending on rank
--
                if :new.rank = 1 then
                        ThisSuperGroup := :new.stratname;
                elsif :new.rank = 2 then
                        ThisGroup := :new.stratname;
                elsif :new.rank = 3 then
                        ThisSubGroup := :new.stratname;
                elsif :new.rank = 4 then
                        ThisFormation := :new.stratname;
                elsif :new.rank = 5 then
                        ThisMember := :new.stratname;
                elsif :new.rank = 6 then
                        ThisBed := :new.stratname;
                end if;
--              Insert this strat's entry
--
                Insert into flatstrat
                        (supergroup, "GROUP", subgroup, Formation, Member, Bed,
                        unitname, unitno) values (ThisSuperGroup, ThisGroup,
                        ThisSubGroup, ThisFormation, ThisMember, ThisBed,
                        :new.stratname, :new.stratno);
        end if;
end;
```

```
rem     *****On-Delete trigger for STRATNAMES to maintain FLATSTRAT*****
rem
rem     if strat is deleted,
rem     - delete current strat's FLATSTRAT record
rem     - update all child records of this strat.
rem
create or replace trigger del_flatstrat
before delete on STRATNAMES
for each row
begin
--
--      Delete this strat's entry
--
        delete from geodx.flatstrat
                where unitno = :old.stratno;
--
--      Now update all child records of this strat.
--
        if :old.rank = 1 then
                update geodx.flatstrat set supergroup = null
                        where Supergroup = :old.stratname;
        elsif :old.rank = 2 then
                update geodx.flatstrat set supergroup = null,
                        "GROUP"    = null
                        where "GROUP" = :old.stratname;
        elsif :old.rank = 3 then
                update geodx.flatstrat set supergroup = null,
                        "GROUP"    = null,
                        subgroup   = null
                        where subgroup = :old.stratname;
        elsif :old.rank = 4 then
                update geodx.flatstrat set supergroup = null,
                        "GROUP"    = null,
                        subgroup   = null,
                        formation  = null
                        where Formation = :old.stratname;
        elsif :old.rank = 5 then
                update geodx.flatstrat set supergroup = null,
                        "GROUP"    = null,
                        subgroup   = null,
                        formation  = null,
                        Member     = null
                        where Member = :old.stratname;
        end if;
end;
```

```
rem     *****On-Update trigger for STRATNAMES to maintain FLATSTRAT*****
rem
rem     if parent pointer has changed:
rem     - get hierarchy chain of parent;
rem     if strat is no longer current,
rem     - delete current strat's record
rem     otherwise
rem     - update current strat's FLATSTRAT record;
rem     then
rem     - update all child records of this strat.
rem
create or replace trigger upd_flatstrat
before update of parent, stratname, rank, iscurrent on STRATNAMES
for each row
declare
        cursor parent_cur is
                select supergroup, "GROUP", subgroup, formation, member, bed
                from geodx.flatstrat
                where unitno = :new.parent;
                ThisSuperGroup varchar2(64);
                ThisGroup      varchar2(64);
                ThisSubGroup   varchar2(64);
                ThisFormation  varchar2(64);
                ThisMember     varchar2(64);
                ThisBed        varchar2(64);
                StratIsCurrent boolean;
begin
        if :new.IsCurrent = 'Y' and nvl(:new.rank,8) < 7 then
                StratIsCurrent := True;
        else
                StratIsCurrent := False;
        end if;
--
--      Get parent's hierarchy
--
        if :new.rank <> nvl(:old.rank,:new.rank) then
                if :old.rank = 1 then
                        ThisSuperGroup := null;
                elsif :old.rank = 2 then
                        ThisGroup := null;
                elsif :old.rank = 3 then
                        ThisSubGroup := null;
                elsif :old.rank = 4 then
                        ThisFormation := null;
                elsif :old.rank = 5 then
                        ThisMember := null;
                elsif :old.rank = 6 then
                        ThisBed := null;
                end if;
        end if;
        if :new.parent is null or not StratIsCurrent then
                ThisSuperGroup := null;
                ThisGroup      := null;
                ThisSubGroup   := null;
                ThisFormation  := null;
                ThisMember     := null;
                ThisBed        := null;
        else
                open parent_cur;
                fetch parent_cur into ThisSuperGroup, ThisGroup,
                        ThisSubgroup, ThisFormation,
```

```
                        ThisMember, ThisBed;
                close parent_cur;
        end if;
        if StratIsCurrent then
--
--      Ensure current strat name is correct
--
                if :new.rank = 1 then
                        ThisSuperGroup := :new.stratname;
                elsif :new.rank = 2 then
                        ThisGroup := :new.stratname;
                elsif :new.rank = 3 then
                        ThisSubGroup := :new.stratname;
                elsif :new.rank = 4 then
                        ThisFormation := :new.stratname;
                elsif :new.rank = 5 then
                        ThisMember := :new.stratname;
                elsif :new.rank = 6 then
                        ThisBed := :new.stratname;
                end if;
                if :old.isCurrent = 'Y' and nvl(:old.rank,8) < 7 then
--
--              Update this strat's entry
--
                        update geodx.flatstrat set supergroup = ThisSuperGroup,
                                "GROUP" = ThisGroup,
                                subgroup = ThisSubGroup,
                                Formation = ThisFormation,
                                Member = ThisMember,
                                Bed = ThisBed,
                                unitname = :new.stratname
                                where unitno = :new.stratno;
                else
--
--              Insert this strat's entry
--
                        Insert into geodx.flatstrat
                                (supergroup, "GROUP", subgroup,
                                Formation, Member, Bed,
                                unitname, unitno) values
                                (ThisSuperGroup, ThisGroup,
                                ThisSubGroup, ThisFormation,
                                ThisMember, ThisBed,
                                :new.stratname, :new.stratno);
                end if;
        else
                delete from geodx.flatstrat
                        where unitno = :old.stratno;
        end if;
--
--      Now update all child records of this strat.
--
        if :old.rank = 1 then
                update geodx.flatstrat set supergroup = ThisSuperGroup
                        where Supergroup = :old.stratname;
```

```
        elsif :old.rank = 2 then
                update geodx.flatstrat set supergroup = ThisSuperGroup,
                        "GROUP"    = ThisGroup
                        where "GROUP" = :old.stratname;
        elsif :old.rank = 3 then
                update geodx.flatstrat set supergroup = ThisSuperGroup,
                        "GROUP"    = ThisGroup,
                        subgroup   = ThisSubGroup
                        where subgroup = :old.stratname;
        elsif :old.rank = 4 then
                update geodx.flatstrat set supergroup = ThisSuperGroup,
                        "GROUP"    = ThisGroup,
                        subgroup   = ThisSubGroup,
                        formation  = ThisFormation
                        where Formation = :old.stratname;
        elsif :old.rank = 5 then
                update geodx.flatstrat set supergroup = ThisSuperGroup,
                        "GROUP"    = ThisGroup,
                        subgroup   = ThisSubGroup,
                        formation  = ThisFormation,
                        Member     = ThisMember
                        where Member = :old.stratname;
        end if;
end;
```

APPENDIX B: Relationships to STRATA, the Stratigraphic Authority Database

STRATA was set up as an authority database for use by other AGSO databases. It originally contained three main tables: STRATLEX - the Stratigraphic Lexicon, GEOPROVS - the Geological Provinces table, and GEOTIME - the Geological Time Scale table, of which only GEOPROVS and GEOTIME remain. In addition to the main tables there are several small lookup tables: STRATRELS, STRATSTATUS (now also no longer part of STRATA), TIMERANK, TIMESTATUS, TIMESCOPE and PROVRANKS. Two views, SUBPROVS and DOMAINS, complement STRATA. Following are the commands for creating the STRATA data structures:

```
create table STRATA.STRATRELS (
        RELNO                   number(1),
        RELNAME                 varchar2(32));

create table STRATA.TIMERANK (
        RANKNO                  number(1) not null,
        RANKNAME                varchar2(16) not null);

create table STRATA.TIMESCOPE (
        SCOPENO                 number(1) not null,
        SCOPENAME               varchar2(20) not null);

create table STRATA.TIMESTATUS (
        STATUSNO                number(1) not null,
        STATUSNAME              varchar2(20) not null);

create table STRATA.PROVRANKS (
        RANKNO                  number(1) not null,
        RANKNAME                varchar2(20) not null);

create table STRATA.GEOTIME (
        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);

create table STRATA.GEOPROVS (
        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));
```

```
create view STRATA.DOMAINS (DOMAINNO,DOMAINNAME) as select
      provno,provname from strata.geoprovs where rank = 3;

create view STRATA.SUBPROVS (SUBPROVNO, SUBPROVNAME)as select
      provno,provname from strata.geoprovs where rank = 2;
```

STRATLEX has been recreated as a view of the STRATNAMES table in GEODX, the Stratigraphic Names Database, but is still accessible via a synonym as STRATA.STRATLEX. The STRATSTATUS lookup table is now also part of GEODX. The field names that had originally been used for the STRATLEX table were retained for the new STRATLEX view because a large number of data entry and retrieval forms as well as retrieval programs had been developed for other databases incorporating the original field names, and it would have meant a lot of additional work to revise them had the field names been changed. Fields *agemin*, *agemax*, *geoprovno*, *overrel*, *underrel* in table STRATNAMES and their counterparts in STRATLEX derive values from STRATA tables GEOTIME, STRATRELS and GEOPROVS. Fields *id_agemin* and *id_agemax* in the STRATNAME_ARTICLE table also reference the GEOTIME table.

Following is a list of the STRATNAMES field names and their counterparts in the STRATLEX view:

STRATNAMES	**STRATLEX**	***definition***
stratno	unitno	*number(5) not null*
geodxno	-	*number(5)*
unitno	-	*number(5)*
stratname	unitname	*varchar2(50) not null*
typestate	typestate	*varchar2(3)*
entrydate	entrydate	*date not null*
enteredby	entryid	*varchar2(8) not null*
approved	-	*varchar2(1)*
apprdate	-	*date*
apprby	-	*varchar2(8)*
rank	rank	*number(1)*
status	status	*number(2) not null*
category	category	*number(2) not null*
card	card	*varchar2(1) not null*
iscurrent	iscurrent	*varchar2(1) not null*
moddate	lastupdate	*date*
modby	updateid	*varchar2(8)*
originator	-	*varchar2(80)*
resdate	-	*date*
agemin	age1	*number(4)*
agemax	age2	*number(4)*
geoprovno	geolprov	*number(5)*
sectholeno	sectholeno	*number(6)*
maxthickness	maxthickness	*number(7,2)*
overlying	overlying	*number(5)*
overrel	overel	*number(3)*
underlying	underlying	*number(5)*
underrel	underel	*number(3)*
firstref	-	*varchar2(9)*
defref	defref	*varchar2(9)*
parent	parent	*number(5)*
prevno	-	*number(5)*
useno	-	*number(5)*
comments	comments	*varchar2(255)*
origno	origno	*number(5)*
siteid	siteid	*varchar2(16)*

APPENDIX C: Guidelines for Creating and Reserving Stratigraphic Names

The names of formal stratigraphic units are compound. All new names should consist of a geographic name combined with an appropriate term indicating the rank of the unit (*Cobar Supergroup, Cuddapan Formation*) or a descriptive term (*Coronation Sandstone*). Names should also be unique for Australia - at the very least they should be sufficiently different from existing units to avoid confusion.

Proposed names can be checked against the Stratigraphic Names Database either via the WWW query facility or through the Stratnames Form on AGSO's database server. Those without ready access to the database can ask the Stratigraphic Index Officer to check names for them. The current contact is Cathy Brown, phone: (06) 249 9535, fax: (06) 249 9977, email: cbrown@agso.gov.au.

Once a suitably distinctive name has been identified, the name is reserved by the Stratigraphic Index Officer, and the state it occurs in recorded. The name, and any other information provided, is added to the database for all users to see. The rough location of the unit (mapsheet name and/or geological province), its approximate age and relations with other units (eg *of El Sherana Group*) are helpful information, if available.

Although reservation of a name is very helpful to the geoscience community, priority of usage is only established by publication. A name is formal and valid only if it complies with the establishment and definition criteria of the ***Field Geologist's Guide to Lithostratigraphic Nomenclature in Australia*** (Staines, 1985 or 1989) or the ***International Stratigraphic Guide*** (Salvador, 1994).

If a unit is worth naming it is worth defining, or at least describing as well as possible. It is most desirable that unit definitions be published to make them widely accessible. If possible, the definitions should accompany the first publication of the approved name.

Before publication, definitions should be approved by the appropriate Stratigraphic Names Subcommittee of the Geological Society of Australia. The Stratigraphic Index Officer can provide current contact details for each State Subcommittee.

After approval, copies of the definitions should be provided to the Stratigraphic Index Officer to be filed in the **Catalogue of Definitions of Stratigraphic Units** which is maintained by the Australian Geological Survey Organisation for the Geological Society of Australia Inc. This step is especially important if, for any reason, the definition cannot be published, or publication is likely to be delayed considerably.

Bibliography of Guidelines to Australian Stratigraphic Nomenclature:

Brakel, A.T., 1989. Proposals for the re-use of invalid and superseded stratigraphic names in Australia. Bureau of Mineral Resources Record 1989/51, 9 pp.

Hedberg, H.D. (editor, for International Subcommission on Stratigraphic Classification), 1976. International Stratigraphic Guide. John Wiley, New York, 200 pp.

Salvador, A. (editor, for International Subcommission on Stratigraphic Classification), 1994. International Stratigraphic Guide, 2nd ed. International Union of Geological Sciences and Geological Society of America, Inc, 214pp.

Staines, H.R.E., 1985. Field geologist's guide to lithostratigraphic nomenclature in Australia. Australian Journal of Earth Sciences 32, 83-106.

Staines, H.R.E., 1989. Abridged guide to lithostratigraphic nomenclature in Australia. Section 5.7 IN Berkman D.A. (compiler) "Field Geologists' Manual" AusIMM Monograph 9, 235-243.

APPENDIX D: Explanation of Stratigraphic Name Categories

The *category* field in the STRATNAMES table is a number field with values 0 to 9. It is designed for administrative purposes to distinguish the different kinds of new stratigraphic names. In combination with entry and modification dates, it is used to produce the Variations List report and various regular statistics.

All categories and their descriptions are contained in the STRATSTATUS table. Full explanations of the categories follow:

0 **STRATLEX entry** - Unpublished, informal names entered through the STRATLEX view, since March 1995, for use in the OZROX Field Geology Database. It is intended that these names be checked regularly and upgraded to 'Reserved', if appropriate.

1 **Variation of published name** - Published misspellings and variations in rank (eg. *Member* to *Formation*), or description (eg. *Volcanics* to *Formation*) are placed in this category. These names are not shown in the Variations List unless they are also defined or redefined.

2 **Other new published name** - New names that have been published without prior reservation belong to this category. They appear in the Variations List when first indexed as published.

3 **Unknown or process pending** - All names entered prior to the introduction of a category field in 1988, in the old RESERVED_NAMES table of GEODX. This is also a short-term default category for new names when another category can not be assigned immediately.

4 **Resvd name published** - Reserved names are changed to this category when a publication is indexed that includes the name. These names are shown in the Variations List when first indexed as published.

5 **Transferred from STRATLEX Mar 1995** - Names added to the old STRATLEX table that had no counterpart, when the table was reunited with GEODX names. These names were never reserved, but may have been used in the OZROX database. Some have since been published, some remain informal and unpublished. Links to reserved or published variations have been established where possible. Not listed in Variations List until published.

6 **Resvd name no longer required** - Reservation of these names was cancelled, either on request of the originator, or by lack of publication or notification of intended use after 5 years.

7 **Defined variation of published name** - A name belongs to this category when a definition or redefinition is received for an unpublished variation of a published name. These names are listed in the defined names section of the Variations List, and are usually published soon after the definition is received.

8 **Reserved** - These names have been reserved, but are not yet published. They are shown in the Variations List when first reserved, and again when they change category to 'Reserved name published'.

9 **Variation of reserved name** - When an unpublished reserved name is modified (eg. a *Formation* becomes a *Member*) or its reservation is continued beyond five years, the category is changed to this value and the name is shown again in the Variations List.

APPENDIX E: Sample Report Output

Reports Menu option 3 - References for specific keywords, authors . . .

A file called 'genrefs.lis' is created in your home directory. Only a sample of retrieved references for the Tennant Creek map sheet is shown.

References from Geodx

for sheet number: 'SE53' 14

(The following references are sorted by reference number.
All enquiries should quote this number.)

58/061 Hays J. 1958
Interim report on the ground water resources of Cabbage Gum Basin, Tennant Creek, Northern Territory.
Bureau of Mineral Resources, Australia. Record
58/ 61

59/049 Crohn P.W. Oldershaw W. Ryan G.R. 1959
The geology of the Tennant Creek gold and copper field. Progress report on the work of the 1958 field season.
Bureau of Mineral Resources, Australia. Record
59/ 49

59/101 Oldershaw W. 1959
Probable sand volcanoes in the Lower Proterozoic at Tennant Creek, Northern territory.
Bureau of Mineral Resources, Australia. Record
59/101

61/101 McMillan N.J. Debnam A.H. 1961
Geochemical prospecting for copper in the Tennant Creek gold-field, Northern Territory.
Bureau of Mineral Resources, Australia. Record
61/101

63/003 1963
Minor metalliferous investigations, Northern Territory resident geological section, October - December, 1962.
Bureau of Mineral Resources, Australia. Record
63/ 3

79/03988 Slansky E. 1977
Plumbogummite from Ivanhoe Mine, Northern Territory, Australia.
Neues Jahrbuch fur Mineralogie. Monatshefte
1977(2) P45-53

79/19358 Geological Survey of Northern Territory. 1976
Sulphur - Northern Territory in Knight C.L.(ed) - Economic geology of Australia and Papua New Guinea - 4. Industrial minerals and rocks.
AusIMM. Monograph Series
8 P387

89/26575 Gulson B.L. Large R.R. Porritt P.M. 1989
Gold exploration using lead isotopes at Tennant Creek, Australia.
Journal of Geochemical Exploration
32(1-3) P309-310

90/26801 Wedekind M.R. Love R.J. 1989
Warrego gold-copper-bismuth mine, Tennant Creek, Northern Territory. IN Jones D.G. (ed) - Northern Territory gold deposits. Bicentennial Gold 88. Excursion guidebook. University of Western Australia. Department of Geology. Publication
16 P39-45

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The White Devil and Black Angel mines, Tennant Creek. IN Jones D.G. (ed) - Northern Territory gold deposits. Bicentennial Gold 88. Excursion guidebook. University of Western Australia. Department of Geology. Publication
16 P51-58

94/27869 McPhie J. 1993
The Tennant Creek porphyry revisited: A synsedimentary sill with peperite margins, Early Proterozoic, Northern Territory. Australian Journal of Earth Sciences
40(6) P545-558

B022 Ivanac J.F. 1954
The geology and mineral deposits of the Tennant Creek Gold-field, Northern Territory.
Bureau of Mineral Resources, Australia. Bulletin
22

B205 Kennewell P.J.Huleatt M.B. 1980
Geology of the Wiso Basin, Northern Territory.
Bureau of Mineral Resources, Australia. Bulletin
205

GOLD0129 Burlinson K. 1984
Exploration for gold at Pine Creek and Tennant Creek, NT, and Halls Creek, WA using the fluid inclusion decrepitation technique. IN AusIMM Annual Conference, Darwin, August 1984. AusIMM. Conference Series
13 P373-376

J0202/07 Bain J.H.C. 1977
Uranium mineralization associated with late Palaeozoic acid magmatism in northeast Queensland.
BMR Journal of Australian Geology & Geophysics
2(2) P 137-147

R083 Crohn P.W. Oldershaw W. 1965
The geology of the Tennant Creek one-mile Sheet area, N.T.
Bureau of Mineral Resources, Australia. Report
83

RC90/092 David L.J. 1990
Minor metals and rare earth elements in Australian base metal ores - A reconnaissance assay survey.
Bureau of Mineral Resources, Australia. Record
90/ 92

references retrieved: 113

Reports Menu option 4 - All details for subsets of stratnames

*This report has the potential to be very large, so a file called 'username.strats' is created in the /scratch directory. The subset chosen here is - **originator like '%Pirajno%'**. Only a sample of the retrieval is shown.*

Australian Stratigraphic Names Database

Number of names retrieved: 35 10-Apr-1996 09:21 PM

```
21253 Y  Bilyuin   WA
         Entered: 02-NOV-94 by GEODX            Status: Reserved
         Definition card: N   Stratname category: Reserved
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-8, Peak Hill

29869 Y  Bryah Group   WA
         Entered: 24-OCT-95 by CBROWN           Status: Reserved
         Definition card: N   Stratname category: Variation of reserved name
         Rank: Group
         Previously known as: Bryah Member
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-8, Peak Hill. Reservation modified Oct 95. Glengarry
                   Basin.

21343 N  Bryah Member   WA
           Preferred name: Bryah Group
         Entered: 02-NOV-94 by GEODX            Status: Superseded
         Definition card: N   Stratname category: Resvd name no longer requ.
         Rank: Member
         Reserved: 02-NOV-94 by Pirajno F.
         Modified: 24-OCT-95 by CBROWN
         Comments: SG50-8, Peak Hill

21537 Y  Coodewa   WA
         Entered: 02-NOV-94 by GEODX            Status: Reserved
         Definition card: N   Stratname category: Reserved
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-8, Peak Hill

21547 Y  Coomballey   WA
         Entered: 02-NOV-94 by GEODX            Status: Reserved
         Definition card: N   Stratname category: Reserved
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-8, Peak Hill

29875 Y  Windplain Subgroup   WA
         Entered: 24-OCT-95 by CBROWN           Status: Reserved
         Definition card: N   Stratname category: Reserved
         Rank: Subgroup
         Reserved: 24-OCT-95 by Occhipinti S., Pirajno F.
         Modified: 02-APR-96 by CBROWN
         Comments: Glengarry 1:250 000 sheet area.
         Parent unit: Glengarry Group

23285 Y  Yandil   WA
         Entered: 02-NOV-94 by GEODX            Status: Reserved
         Definition card: N   Stratname category: Reserved
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-12, Glengarry

23314 Y  Yulga Jinna   WA
         Entered: 02-NOV-94 by GEODX            Status: Reserved
         Definition card: N   Stratname category: Reserved
         Reserved: 02-NOV-94 by Pirajno F.
         Comments: SG50-8, Peak Hill
```

Reports Menu option 8 - Usage and references for specified stratnames

Up to six names can be selected in each retrieval. A wildcard is automatically appended, so usually only the geographic part of the name needs to be typed in. The retrieval is case sensitive. A file called 'stratrefs.lis' is created in your home directory.

Australian stratigraphic names

Retrieval on: Adaminaby G Coomber Willow Glen Toolamanang F

Adaminaby Group 98 Y NSW
Entered: 31-MAY-91 by GEODX Status: Described
First published in Geodx reference: 91/27217
Definition card: N Stratname category: Variation of published name
Rank: Group
Previously known as: Adaminaby beds
Modified: 05-DEC-95 by CBROWN
Comments: See also defined Adaminaby beds (Intended as a redefinition). To be used on Bathurst 1:250 000 sheet?
Age: Early Ordovician

Geodx No.	Usage	Status	Comments
91/27217	p24	Described	Intended as a redefinition to replace Adaminaby beds.

Coomber Formation 29939 Y NSW
Type state: NSW
Entered: 05-DEC-95 by CBROWN Status: Defined
First published in Geodx reference: 94/28015
Definition card: Y Stratname category: Resvd name published
Rank: Formation, beds
Previously known as: Coomber
Reserved: 10-NOV-80 by Campbell J.C., Pemberton J. (1992)
Approved usage of the name: 16-NOV-95 by HBASDEN
Modified: 12-MAR-96 by CBROWN
Comments: Reservation renewed by Pemberton, U Wollongong. Defn card supplied by C.L. Fergusson & G.P. Colquhoun. Intruded by Pyangle Pass Granite. Ang unconf overlain by L Carboniferous-E Permian Rylstone Volcanics & Permian
Age: Late Ordovician - Early Silurian
Maximum thickness (m): 1750
Parent unit: Cabonne Group
Overlying unit: Dungeree Volcanics disconformity
Underlying unit: Adaminaby Group conformity

Geodx No.	Usage	Status	Comments
95/28123	p199,Table 1 p200	Described	Capertee High. Representative section location given in Table1

Toolamanang Formation 30025 Y NSW
Entered: 16-JAN-96 by CBROWN Status: Described
First published in Geodx reference: 94/28015
Definition card: N Stratname category: Variation of published name
Rank: Formation, beds
Previously known as: Toolamanang Volcanics
Modified: 12-MAR-96 by CBROWN
Comments: See also defined name Toolamanang Volcanics.
Parent unit: Tannabutta Group

Geodx No.	Usage	Status	Comments
95/28123	p199,Table 1 p200.	Described	Capertee High. Lateral equiv. to Windamere Volcanics.

Willow Glen Formation 20119 Y NSW
Type state: NSW
Entered: 01-JAN-88 by GEODX Status: Defined
Defined in Geodx reference: 80/21035
First published in Geodx reference: 80/21035
Definition card: Y Stratname category: Unknown or process pending
Rank: Formation, beds
Modified: 12-MAR-96 by CBROWN
Age: Silurian - Silurian
Parent unit: Tannabutta Group

Geodx No.	Usage	Status	Comments
80/21035	p54	Defined	See also Fig.2.& 3. Variation of Willow Formation ?
84/24546	p450	Mentioned	
85/25014	p593	Mentioned	
95/28123	p203,Table 2 p201	Described	Type section location given in Table 2.

References from Geodx

for: Adaminaby G Coomber Willow Glen Toolamanang F
(The following references are sorted by reference number.
All enquiries should quote this number.)

80/21035 Pemberton J.W. 1980
The geology of an area near Cudgegong, New South Wales.
Royal Society of New South Wales. Journal and Proceedings
113(2) p49-62

84/24546 Strat. Nomenclature Subcommittee, NSW. 1983
Stratigraphic nomenclature supplement for 1980.
Geological Survey of New South Wales. Records
21(2) p449-453

85/25014 Pemberton J.W. Offler R. 1985
Significance of clinopyroxene compositions from the Cudgegong Volcanics and Toolamanang Volcanics; Cudgegong-Mudgee district, NSW, Australia.
Mineralogical Magazine
353 p591-599

91/27217 Glen R.A. Stewart I. Vandenberg A.H.M. 1990
Imbrication of a Reference Section: Re-evaluation of the Adaminaby Beds at El Paso, Dalgety, New South Wales.
Royal Society of New South Wales. Journal and Proceedings
123(1/2) p15-26

93/27579 VandenBerg A.H.M. Nott R.J. Glen R.A. 1992
Bendoc 1:100 000 map. Geological Report.
Geological Survey of Victoria. Report
90 122pp

95/28123 Pemberton J.W. Colquhoun G.P. Wright A.J. Booth A.N. Campbell J.C. Cook A.G. Millsteed B.D. 1994
Stratigraphy and Depositional Environments of the Northern Capertee High.
Linnean Society of New South Wales. Proceedings
114 (4) 195-224.

Database Checks Menu item 5 - Stratnames for a state

The database checks menu (Reports Menu option 11) is for use by Stratigraphic Index staff.

Enter value for state: **NSW**

Current stratigraphic names in a given State

STRATNO	Stratigraphic Name	State
27689	Aarons Pass Granite	NSW
28	Abbey Green Coal	NSW
32	Abercorn Granite	NSW
34	Abercrombie Caves marble	NSW
36	Abercrombie bed	NSW
37	Abercrombie beds	NSW
39	Aberdare Conglomerate	NSW, QLD
...		
77	Ace Intrusive Complex	NSW
88	Acton Shale Member	NSW, ACT
98	Adaminaby Group	NSW
99	Adaminaby beds	NSW, VIC, ACT
...		
7452	Gloucester Coal Measures	NSW
7454	Gloucester Rhyolite	NSW
7453	Gloucester Rhyolite Member	NSW
7460	Gnalta Group	NSW, SA
27420	Goalen Head Gabbro	NSW
7469	Gobondery Granite	NSW
7470	Gocup Granite	NSW
7481	Gogs Top Trondhjemite	NSW
7502	Golden Gully beds	NSW
7521	Gollan Beds	NSW
27422	Gomiala Shale	NSW
25019	Gongolgin Granite	NSW
26266	Gooandra Volcanics	NSW
7529	Gooandra lava	NSW
...		
14635	Orallo Formation	NSW, QLD
14670	Otford Greywacke Member	NSW
14671	Otford Sandstone Member	NSW
14680	Ottery Adamellite-Porphyrite	NSW
14690	Ourimbah Sandstone Member	NSW
24448	Owendale Intrusive Complex	NSW
26827	Oxley Metamorphics	NSW
22609	Pacific Palms Formation	NSW
14761	Paddys Flat Formation	NSW, QLD
14764	Paddys River Limestone	NSW
26093	Paddys River Volcanics	NSW, ACT
...		
21033	Yowahro Formation	NSW
25675	Yowaka Granite	NSW
21056	Yuendoo Andesite Tuff	NSW
27635	Yuendoo Andesite Tuff Member	NSW
21065	Yulgilbar Adamellite	NSW
21067	Yullundry Formation	NSW
23319	Yurammie Granodiorite	NSW
29515	Yuranigh Limestone	NSW
21076	Zanci Unit	NSW

4990 rows selected.

Official Reports Menu item 4 - State Requirements list

The Official Reports (Reports Menu option 10), are for use by Stratigraphic Index staff.

TAS July - September 1995

Author index

Author	Reference
Banks M.R.	94/27955
Burkley L.A.	94/27955
Domack C.R.	94/27955
Domack E.W.	94/27955
Elliott C.G.	94/27905
Everard J.L.	94/27909
Foster D.A.	94/27960
Gleadow A.J.W.	94/27960
Gray D.R.	94/27905
Hand S.J.	94/27954
Leaman D.E.	94/27905
Villa I.M.	94/27909
Woodward N.B.	94/27905

Map Sheet Index

Areas covered by references indexed during
July - September 1995

Map number	Reference
SK55-5	94/27909

Stratigraphic Names

Appearing in references indexed during
July - September 1995

Stratigraphic name	Reference	Location	Usage
Barrington Chert	94/27905	p172	Briefly described
Berriedale Formation	94/27954	Fig.2,p462	Briefly described
Bundella Formation	94/27954	Fig.2,p462	Briefly described
	94/27955	p475	Briefly described
Cascades Group	94/27954	Fig.2,p462	Briefly described
Cateena Mudstone	94/27905	p172	Mentioned
Central Volcanic Complex	94/27909	p266	Briefly described
Comstock Tuff	94/27909	p267	Briefly described
Crown Hill Andesite	94/27909	p267	Described
Faulkner Group	94/27954	Fig.2,p462	Briefly described
Ferntree Group	94/27954	Fig.2,p462	Briefly described
Gog Graywacke	94/27905	p172	Mentioned
Golden Valley Group	94/27955	p475	Briefly described
Gordon Group	94/27909	p270	Briefly described
Heemskirk Granite	94/27954	p467	Briefly described
Housetop Granite	94/27905	p171	Briefly described
Inglis Formation	94/27955	p472	Mentioned
Inglis Siltstone	94/27954	p463	Mentioned
Lobster Creek Volcanics	94/27905	p172	Briefly described
Malbina Formation	94/27954	Fig.2,p462	Briefly described
Mathinna beds	94/27955	Fig.3,p474	Briefly described
Motton Spilite	94/27905	p172	Briefly described
Mount Read Volcanics	94/27909	p265	Briefly described
Murchison Granite	94/27909	p265	Briefly described
Nassau Formation	94/27954	Fig.2,p462	Briefly described
Newton Creek Sandstone Member	94/27909	p267	Briefly described
Owen Conglomerate	94/27909	p267	Briefly described

Stratigraphic name	Reference	Location	Usage
Parmeener Supergroup	94/27954	Fig.2,p462	Briefly described
	94/27955	p472	Briefly described
Pioneer Beds	94/27909	Fig.2,p267	Briefly described
Pioneer Beds Member	94/27909	p267	Briefly described
Quamby Formation	94/27955	p472	Mentioned
Risdon Formation	94/27954	Fig.2,p462	Briefly described
Sticht Range beds	94/27909	p265	Briefly described
Stockers Formation	94/27954	p459	Mentioned
Stockers Tillite	94/27955	p472	Briefly described
Truro Formation	94/27954	p459	Mentioned
Truro Tillite	94/27955	p472	Briefly described
Tyndall Group	94/27909	p267	Briefly described
Woody Island Formation	94/27954	Fig.2,p462	Briefly described
	94/27955	p472	Mentioned
Woody Island Siltstone	94/27954	p463	Mentioned
Wynyard Formation	94/27954	p459	Mentioned
Wynyard Tillite	94/27955	p472	Briefly described

Geodx Bibliography (July - September 1995)

94/27905 Leaman D.E. Woodward N.B. Gray D.R. Elliott C.G. 1994
Discussion and Reply -- Repeated Palaeozoic thrusting and allochthoneity of Precambrian basement, northern Tasmania.
Australian Journal of Earth Sciences
41(2) P171-173
Point Hibbs / Ulverstone /

94/27909 Everard J.L. Villa I.M. 1994
Argon geochronology of the Crown Hill Andesite, Mt Read Volcanics, Tasmania.
Australian Journal of Earth Sciences
41(3) P265-272
Queenstown /
SK55-5 /
Dundas Trough /

94/27954 Hand S.J. 1993
Palaeogeography of Tasmania's Permo-Carboniferous glacigenic sediments; In Findlay, Unrug, Banks, & Veevers (eds) Gondwana Eight. Assmebly, evolution and dispersal. Proceedings of the Eighth Gondwana Symposium, Hobart, Tasmania, Australia,
A.A. Balkema, Rotterdam
1v P459-469
Tasmania Basin /

94/27955 Domack E.W. Burkley L.A. Domack C.R. Banks M.R. 1993
Facies analysis of glacial marine pebbly mudstones in the Tasmania Basin: Implications for regional palaeoclimates during the late Palaeozoic; In Findlay, Unrug, Banks, & Veevers (eds) Gondwana Eight. Assembly, evolution and dispersal. Proc
A.A. Balkema, Rotterdam
1v P471-484
Tasmania Basin /

94/27960 Foster D.A. Gleadow A.J.W. 1993
The architecture of Gondwana rifting in southeastern Australia: Evidence from apatite fission track thermochronology; In Findlay, Unrug, Banks, & Veevers (eds) Gondwana Eight. Assembly, evolution and dispersal. Proceedings of the Eighth Gon
A.A. Balkema, Rotterdam
1v P597-603
Kanmantoo Fold Belt / Lachlan Fold Belt /