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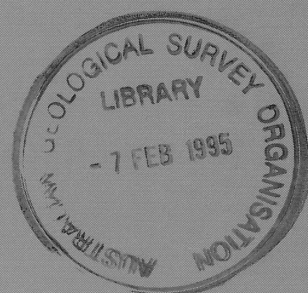
AGSO

GUIDE TO AGSOREFS AGSO's SHARED BIBLIOGRAPHIC REFERENCE DATABASE

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By R J RYBURN & L D BOND

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REFERENCE DATABASE

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R.J. Ryburn & L.D. Bond

AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

CANBERRA



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ABSTRACT

AGSOREFS is a shared bibliographic database designed to serve two main purposes. First, it is intended to serve as a single reference pool for all AGSO relational geoscience databases, replacing a number of earlier reference systems. Its standardised references can be displayed from any Oracle database via a unique reference ID. Second, it is designed to function as a pooled reference system for all AGSO staff members. Users can select from it the references they want in their private lists, and can attach their own IDs and keywords.

The menus, screen forms and reports used to input and view references, keywords, etc., are described in detail. Definitions of most fields in the database are given in some depth under descriptions of the screen forms - providing, in effect, a comprehensive data dictionary of the database. The database schema, with all definitions of tables, views and indexes is listed in an appendix to the guide. Instructions are given in a second appendix on how to parse and bulk-load references from documents and other databases.

1 - INTRODUCTION

Bibliographic references are an important adjunct to most geoscientific databases. They are a signpost to further information on the quality and provenance of the data. Owing to difficulties in maintaining a unified reference database - notably the absence of a suitable custodian - most AGSO Oracle databases were previously set up with their own reference tables. This resulted in a number of systems with various designs and differing standards. The largest of these is the bibliographic component of GEODX (Lenz & Modrak 1990) - the National Stratigraphic Index database - which has about 25 000 references on Australian stratigraphy. PALREFS was another substantial bibliographic database used by some AGSO palaeontologists. Our experience in shared relational databases is now such that we can develop a single, multi-custodian database that satisfies most of our clients' needs. The result is AGSOREFS, which draws together a number of previously isolated reference databases. We hope to consolidate all such reference databases into AGSOREFS.

Initial reactions to the problem of references in AGSO's geoscience databases have been "Why not use GEODX?", or "Why not use AESIS?" - the large reference database run by the Australian Mineral Foundation (AMF). The principal objection to these seemingly reasonable suggestions is that these databases have specific topics, and their custodians do not want references from outside their normal field (even so, GEODX is polluted by gold-deposit references from the now-defunct MINDEP database). Furthermore, these databases are controlled by custodians who abhor the idea of individual users entering and updating their own references, whereas AGSO scientists regard a single custodian as an intolerable bottleneck. Fortunately, relational databases have a structure, called a 'union', that allows several databases (or tables or views) to be joined end-to-end to form a single seamless database. To this we add 'views' that restrict users to just the references they wish to see.

Thus, AGSOREFS has been formed as a union between the existing tightly-controlled and highly-normalised GEODX database and several new tables of simpler structure that are accessible to AGSO users at large. This gives the overall database 'simultaneous loose-tight properties' so favoured in organisational models (Pieters & Waterman 1984, p15). Any user is free to insert a new reference into the 'loose' part of the database after first ascertaining that the reference is not already in AGSOREFS. Alternatively, if the desired reference is on Australian geology, a user can request the GEODX custodian to add it to the 'tight' part. No reference can be deleted once it has been entered, but individual users (or geoscience databases) have control over which references appear in their view of the database. In addition, all users can set up their own private keywords.

It would be nice to be able to include AMF's AESIS in the AGSOREFS union, but the technology has not yet advanced to the stage where this can be done easily, not to mention commercial and administrative problems. The performance, alone, of such a union would be unacceptable at present. Nevertheless, this is something that should be kept in mind for the future, as it may become feasible in a few years.

This guide describes the infrastructure of the AGSOREFS database, including all screen forms and definitions of all fields and tables. For users' information on the AViiON database server, AGSO's Oracle environments and the use of SQL*Plus, SQL*Forms, etc., see the "Users' Guide to AGSO's Oracle Database System" (Lenz et al. 1993).

2 - AGSO's REFERENCE STANDARD

A reference, bibliographic reference, or end reference, is the full author-year-title-source quotation normally found in a reference list or bibliography at the end of a document. AGSO referencing has long followed the 'Harvard' system, which was first promoted in the University of Chicago Style Manual and is now widely followed in the earth and life sciences. This system is also advocated in the Australian Government Publishing Service Style Manual (AGPS, 1994). It uses author-year citations embedded in the body of the text, with the full references listed at the end of the document.

However, the details of layout, punctuation and text enhancements vary widely, and there are a number of international standards in different disciplines. The new AGSO standard is similar to the style used by the United States Geological Survey, Geological Society of America, Elsevier, Economic Geology and several other prominent earth science journals. It is designed to reduce the work required to prepare a reference list. Gone are small capitals, bold text and italics - except for taxonomic names in titles. The style is best illustrated with the help of a few examples :

- Burst, J.F., 1965. Subaqueously formed shrinkage cracks in clay. *Journal of Sedimentary Petrology*, 35, 348-353.
- Davies, G.R., 1970. Algal-laminated sediments, Gladstone Embayment, Shark Bay, Western Australia. In: Logan, B.W., Davies, G.R., Read, J.F. & Cebulski, D.E. (editors), *Carbonate sedimentation and environments, Shark Bay, Western Australia*. American Association of Petroleum Geologists, Memoir 13, 169-205.
- Friedman, G.M. & Sanders, J.E., 1974. *Principles of sedimentology*. Wiley, New York.
- Jago, J.B., Dyson, I.A. & Gatehouse, C.G., 1994. The nature of the sequence boundary between the Normanville and Kanmantoo Groups on Fleurieu Peninsula, South Australia. *Australian Journal of Earth Sciences*, 41, 445-453.
- 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., 1973. Pomio, Papua New Guinea. 1:250 000 geological series map. Sheet SB/56-6, 1st edition. Bureau of Mineral Resources, Australia.
- Scott, G.H., 1980. *Globorotalia inflata* lineage and *G. crassaformis* from Blind River, New Zealand: recognition, relations, and use in uppermost Miocene-Lower Pliocene biostratigraphy. *New Zealand Journal of Geology and Geophysics*, 23, 665-677.

Note that italics are not used, except for taxonomic names occurring within a title. This removes a major source of confusion about italicisation of the title in monographs and the source in periodicals - a convention which is difficult to automate, particularly in the instance of monograph series. Does one italicise the monograph title or the series title?

In general, the volume number is not preceded by 'v' or 'vol', nor the page range by 'p' or 'pp', etc. In straightforward journal references the numbers are clear enough on their own. This has been the case for some time in AGSO reference lists. Although the issue or 'number' is not usually needed in addition to the volume, there are some cases where page numbering starts at one in each new issue. In this case the issue must be included in brackets after the volume - e.g., *Journal of Obfuscation* 23(3), 23-41. However, issue numbers are handy for finding the right issue in unbound sets, which are increasingly encountered as a result of reduced library budgets. Include them if you wish. Page numbers are only given for serial articles, not for monographs such as books or AGSO Records (i.e., do not append '48p' or '48pp'). The references in AGSOREFS are primarily intended as signposts, and most users are not interested in how many pages a monograph has. Similarly, do not include the number of plates in a reference.

The new AGSO standard is not binding. If you feel the need to deviate, and you can convince the editors, then go ahead. The over-riding philosophy should be that references are listed in bibliographies solely so that readers can obtain the corresponding source material from a library. Therefore, they need to contain only the minimum information needed to efficiently achieve this aim.

3 - REDUNDANT REFERENCES

One of the issues that must be addressed in all large bibliographic databases is the problem of redundant references. Even where the database is under the control of a single custodian, as in GEODX, it is almost impossible to ensure that some references will not be repeated somewhere in the database. In a multi-custodian database like AGSOREFS the problem is much worse, and we are forced to concede that redundant references will inevitably occur in the database as a whole. Since AGSOREFS has been built by bringing together a number of previously separate databases, the initial incidence of redundant references is quite high, and we do not have the time or resources to cull all redundant references.

In AGSOREFS the redundancy problem is sidestepped by throwing it back to individual clients to police their own reference lists. Personal users access the database via a list of pointers that determine what references belong in their private list, and it is entirely in the hands of the user whether duplicates occur in their private view. Similarly, geoscience databases like OZMIN (Ewers & Ryburn 1993) have pointers to references in AGSOREFS, and it is up to the custodians of these databases to maintain their own lists. Provided the redundancy problem does not get out of hand, it does not matter if several versions of the same reference appear when the entire database is queried. The user merely selects one (preferably the GEODX one) to add to their private list. Therefore, redundant references do not normally appear in printouts that use these private lists of reference pointers.

Nevertheless, AGSOREFS has mechanisms to reduce the incidence of redundant references. The first line of defence is that, in general, you must query the database before a new reference can be added. In addition, when you try to insert a new reference, if AGSOREFS detects other instances of the same title and year it will alert you before you can commit the reference to the database. Be aware, though, that the slightest difference in punctuation or spelling in the titles will prevent this check performing as it should.

On the other hand, if you find that the required reference is already in the database, but you are dissatisfied with the content, or way it has been entered, you are then entitled to enter your preferred version. This should not happen very often, as AGSOREFS controls the style of references you can input via the database's screen forms.

4 - STRUCTURE OF AGSOREFS

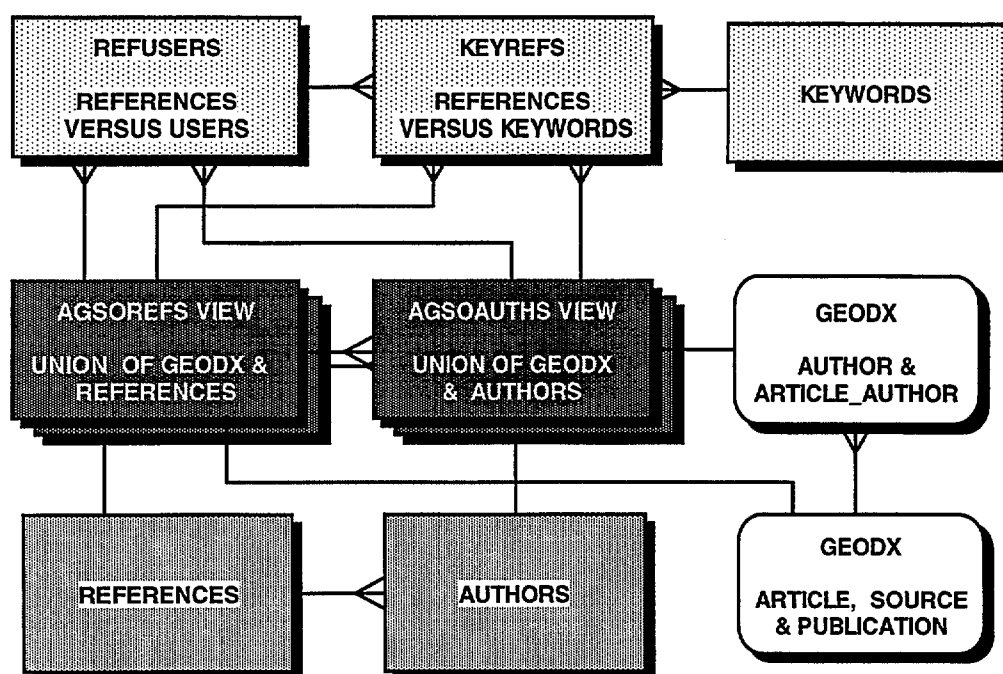


Figure 1. The structure of AGSOREFS showing relationships between tables and views. The 'crows feet' mark the 'many' end of many-to-one links. GEODX tables not shown in detail (see Fig. 2).

AGSOREFS has a simple structure with user-entered references accommodated in just two tables - REFERENCES and AUTHORS (see Fig. 1 above). The bulk of the reference, namely the reference ID, title, source, volume plus part and page numbers, belongs in the REFERENCES table. The AUTHORS table accommodates one author per record along with the same reference ID and a sequence number for the author in multi-author references. This arrangement implies a many-to-one relationship between authors and references, whereas the true relationship is many-to-many, as modelled by GEODX. In AGSOREFS, though, we are interested in authors only as an aid to reference identification, and the many-to-one compromise offers the advantages of simplicity and superior performance. In the many-to-many model the users must select each author from a validation table of authors. If the required author is not present the user must detour to enter the author into the validation table, and most users find this procedure awkward. In the many-to-one situation the user just enters the author's name and initials. The same author can occur many times in the authors table - associated with different reference IDs. The downside of this system is that it is more prone to spelling mistakes. On the other hand, the same author is often quoted differently in different references - eg., 'Ryburn R.' and 'Ryburn R.J.'.

Overlaying these two tables are two views that join AGSOREFS to GEODX. The statements used to create these views are good illustrations of the power of the SQL language :

```

CREATE VIEW AGSOAUTHS AS (
    SELECT REFID, AUTHOR, SEQUENCE, ENTEREDBY
    FROM GEOREF.AUTHORS
    UNION
    SELECT CD_ARTICLE, NAME_AUTHOR, ORDER_SEQUENCE, 'GEODX'
    FROM GEODX.AUTHOR, GEODX.ARTICLE_AUTHOR
    WHERE AUTHOR.ID_AUTHOR = ARTICLE_AUTHOR.ID_AUTHOR );

CREATE VIEW AGSOREFS AS (
    SELECT REFID, ENTEREDBY, ENTRYDATE,
    YEAR, TITLE, SOURCE, VOLPART, PAGES
    FROM GEOREF.REFERENCES
    UNION
    SELECT CD_ARTICLE, 'GEODX', DT_PROCESS,
    TO_CHAR(DT_PUBLICATION), TX_TITLE, NAME_PUBLICATION,
    NO_VOLPART, SUBSTR(NAME_PAGE,1,36)
    FROM GEODX.ARTICLE, GEODX.PUBLICATION, GEODX.SOURCE
    WHERE PUBLICATION.ID_PUBLICATION = SOURCE.ID_PUBLICATION
    AND SOURCE.ID_SOURCE = ARTICLE.ID_SOURCE );

```

Note the use of the union operator in each view and the need to join several GEODX tables to match the equivalent AGSOREFS tables. The names of the columns in these views are the same as those in the first half of each union - i.e., those belonging to the REFERENCES and AUTHORS tables in AGSOREFS. These views may only be used to select references from the database, not to insert, delete or update them.

Three additional tables control the ownership of references and keywords. REFUSERS establishes what references belong in the private list of each Oracle user and allows the user to attach their own IDs to any references including GEODX references. KEYWORDS contains a list of all keywords and their owners. The same keyword can occur only once for any given owner, but more than once between different owners. Keywords also have a parent pointer, allowing a hierarchy of keywords. KEYREFS contains a list of what keywords belong to what references - and who owns the linkage. All tables, views and indexes in AGSOREFS are owned by GEOREF. The complete list of tables and views is :

TABLE OR VIEW	CONTENTS
REFERENCES	enterable table for ID, title, source, volume, etc
AUTHORS	enterable table for ID, authors and their sequence
AGSOREFS	union view of REFERENCES with GEODX tables
AGSOAUTHS	union view of AUTHORS with GEODX tables
REFUSERS	Oracle users <i>versus</i> reference IDs and private IDs
KEYWORDS	keywords, parent pointers and owners
KEYREFS	reference IDs <i>versus</i> keywords <i>versus</i> owners
MAXNOS	table for tracking current max reference ID
TREFERENCES	temporary loading table identical to REFERENCES
TAUTHORS	temporary loading table identical to AUTHORS

The full database shema with all database definitions is listed in Appendix A.

5 - STRUCTURE OF GEODX

The bibliographic part of GEODX consists of a number of tables (Fig. 2). GEODX tables used by the AGSOAUTHS and AGSOREFS union views in the AGSOREFS database include AUTHOR, ARTICLE_AUTHOR, ARTICLE, SOURCE and PUBLICATION. GEODX also contains tables that allow references to be linked to GEODX's own keywords (KEYWORD, KEYWORD_ARTICLE), geological provinces (ARTICLE_GEOLPREV), place names (ARTICLE_PLACE), states of Australia (ARTICLE_STATE, STATE), 1:250 000 map sheet (ARTICLE_250K) and 1:100 000 map sheet (ARTICLE_100K). Not shown here are the parts of GEODX that link references to stratigraphic names.

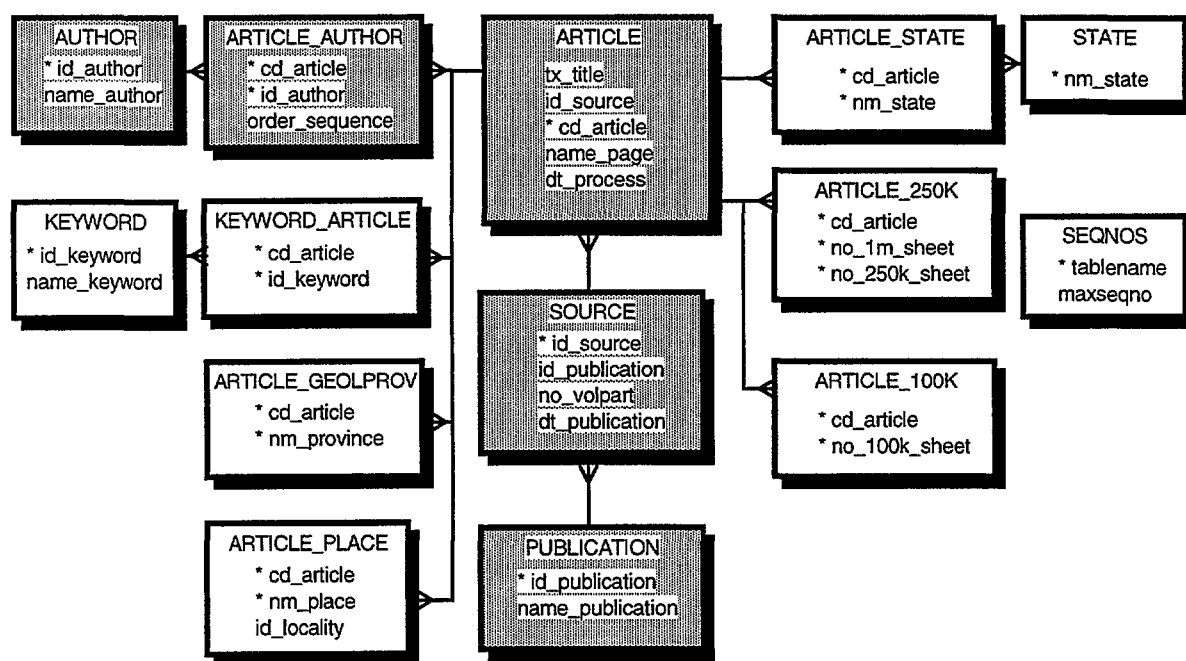


Figure 2. Structure of the bibliographic part of GEODX. The tables used by AGSOREFS are in grey. The 'many' end of many-to-one joins are indicated by 'crows feet'. The asterisks indicate primary key fields.

Users wishing to take advantage of these special GEODX features for querying purposes should call up the GEODX menu from the AViiON's UNIX prompt by typing :

geodx <ENTER>

For a more complete description of GEODX, see Lenz & Modrak (1990).

6 - SECURITY AND ACCESS

Security and control of access are critical to the success of AGSOREFS, as many users will contribute references to the database, and all users select references from it. Underpinning this is the principle of ownership - nearly all objects in AGSOREFS are owned by someone. Not only are all references owned (many are owned by GEODX), but so are the private lists of reference pointers, alternative IDs, keywords and the linkages between keywords and references. References cannot be deleted once they have been entered, but all other objects can be updated or deleted by their owners. There are no secrets in AGSOREFS - all objects can be seen, but not necessarily changed.

Select Access

All internal AGSO users have select access to all tables in AGSOREFS, including all relevant GEODX tables. When using the the SQL*Plus language, all users may select data from any of these tables, provided they prefix the name of the table or view with the owner's name and a full stop, e.g. :

```
SELECT REFID FROM GEOREF.AUTHORS
WHERE AUTHOR LIKE 'Jones%';
```

```
SELECT CD_ARTICLE FROM GEODX.ARTICLE_100K
WHERE NO_100K_SHEET = 7532;
```

GEOREF being the owner of all AGSOREFS tables, and GEODX of all GEODX tables.

Insert, Update and Delete Access

In AGSOREFS all internal Oracle users in the production environment can add or change *their own data*, via specially named views. Those relevant to AGSOREFS, and their corresponding base tables, are as follows -

BASE TABLE	INSERT/UPDATE VIEW
AUTHORS	UAUTHORS
REFERENCES	UREFERENCES
REFUSERS	UREFUSERS
KEYREFS	UKEYREFS
KEYWORDS	UKEYWORDS

Note that records in the UREFERENCES view - the essential part of each reference - cannot be deleted. However, authors, keywords, keyword pointers and reference pointers can all be deleted by their owners.

The restrictions applying to the above views are the same in each case. For example, the view UREFUSERS of the REFUSERS table is defined as -

```
CREATE VIEW UREFUSERS AS  
SELECT * FROM REFUSERS WHERE USERID = USER;
```

The word USER in the above statement is an Oracle function that returns the current Oracle username. Each of the above tables has a mandatory field called OWNER, USERID or ENTEREDBY for the Oracle owner of the record, or the Oracle username of the person entering the data (usually, one and the same thing). This scheme guarantees that the users see only their own records in the insert/update versions of the forms, and only they or the data custodians can alter or delete them.

Users wishing to use SQL*Plus to insert, update or delete records in the above main tables (or SQL*Loader to load records from ASCII files) must use the above views.

Database Owners' Access Rights

The user GEOREF has complete privileges on all tables and views that it owns in the AGSOREFS database, as does the owner GEODX in the Stratigraphic Index database. However, once a database has been 'locked' into the production environment, all changes affecting the structure of tables and views must first be submitted by the owner to the database administrator via the change-control directory (see Kucka 1994).

7 - MENU SYSTEM

Access to AGSOREFS is via a tree-structured menu system covering the AGSO Geological Database System. This includes SQL*Plus command-line environment, reporting programs and nearly all screen forms. Most ad-hoc queries, data inserts and updates are done via the screen forms, although you should also know that batch retrievals and updates are often done in SQL*Plus (see Lenz et al. 1993). Also, Oracle Data Browser, a Microsoft Windows client program, is increasingly used to extract data from Oracle databases. To run the Geological Databases menu first log into UNIX on the AViiON server and specify your terminal type (see Lenz et al., 1993). Then type -

geol <ENTER>

This automatically puts you into the Oracle production environment and brings up the SQL*Menu login screen. After entering your Oracle username and password the first screen of the main menu is displayed. This currently looks like this :

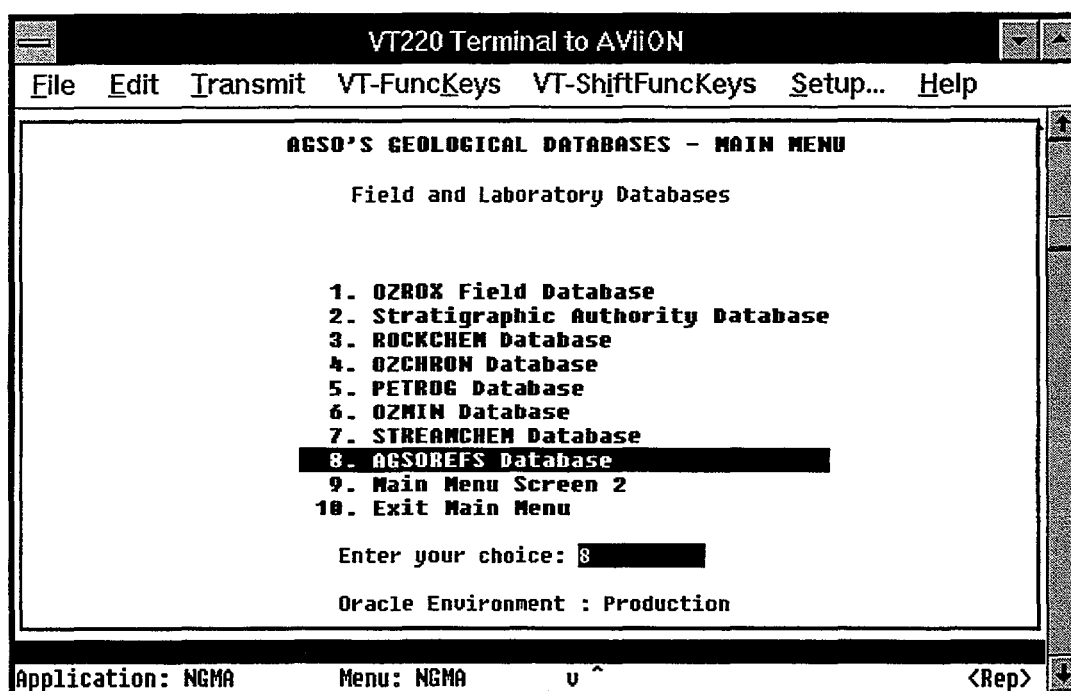


Figure 3. Screen 1 of the main menu to AGSO's Geological Databases. This menu gives access to nearly all areas of AGSO's Geological Field and Laboratory Database system.

Selecting item **10** in the menu, or pressing the **EXIT** function key, takes you back to the AViiON server's UNIX prompt.

To engage the AGSOREFS database menu just enter **8**, or move the highlight bar down to item **8** then press **ENTER**. The following screen appears -

```

VT220 Terminal to AViiON
File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS
AGSO's Shared Bibliographic Database

1. Single-Author Query Form
2. Personal Keyword-Reference Form
3. General Keyword-Reference Query Form
4. Reference Insert/Update Form
5. Keywords Only Form
6. Reference Report
7. Keywords Report
8. SQL*Plus
9. Exit Submenu

Enter your choice: 1
Oracle Environment : Production

Application: NGMA      Menu: AGSOREFS      v      <Rep>

```

Figure 4. The AGSOREFS menu.

This menu gives you access to all forms and report programs belonging to the AGSOREFS database. However, if item **4** is displayed in a different colour from the rest of the menu (as shown in Figure 4), then you cannot access the Reference Insert/Update form directly from the menu. You must first query the database via the forms at items **1** or **2** of the menu before you can add a new reference (see Sections 8, 9 & 11). Item **1** is the Single-Author Query form for rapid querying of AGSOREFS by single authors, and also for adding existing references to your private list. Use the Personal Keyword-Reference form at item **2** for adding references and keywords to your private view. Item **8** takes you to the SQL*Plus command-line environment, from where you return by entering **'EXIT'**. Selecting item **9** or using the **PREVIOUS MENU** function returns you to the main menu.

The AGSOREFS screen forms and reports accessible from the above menu are described below. Formal definitions of all AGSOREFS tables, views and indexes are listed in Appendix A, while procedures for loading references into AGSOREFS from pre-existing lists and databases are detailed in Appendix B. The new bibliographic reference arrangements for the OZROX field geology database (Formerly the NGMA field database, Ryburn et al., 1993a) and the PETROG Petrography Database (Ryburn et al. 1994) are covered in Appendix C.

If users find the current AGSOREFS screen forms 'unfriendly' then please bear with us. The current 'character-based' interface will soon be replaced with a graphical windows-based interface. Users should then find the database more intuitive and easier to use.

8 - REFERENCE INSERT/UPDATE FORM

VT220 Terminal to AViON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS - AGSO'S REFERENCE DATABASE - REFERENCE INSERT/UPDATE FORM

A Author (Authors Block) Sequence No.

U Bassett M.G. 1

T Holmer L.E. 2

H Popov L.E. 3

D Laurie J.R. 4

Note that this form can retrieve only the references that you yourself have previously entered - and may therefore update

(Reference Details Block)

R Year 1994 Reference ID *11009 Entered By JLAURIE

E User's RefID L06977 Entry Date 18-JUL-94

F Title Phylogenetic analysis and classification of the Brachiopoda - reply and comments

E Source Lethaia

N Vol/Part 26 Pages 385-386

S Save these reference details for duplicating to subsequent entries []

Count: *1 <Replace>

Figure 5. The Reference Insert/Update form.

This form is described first as it is the simplest in AGSOREFS that includes all the fields in the AUTHORS and REFERENCES tables, and it is the *only* form you can use to enter a new reference into the database. The form is accessible from item 4 in the AGSOREFS menu only by the owner and a few specially privileged users. Most users see item 4 in a colour different to the rest of the menu, meaning they cannot access it directly. They must first query the database with another form before they can enter references with this form (see Sections 9 & 11). This procedure is aimed at reducing the incidence of redundant references in the database. The insert/update form also warns you before saving a reference if it finds other existing references with the same title and year. However, the comparison must be letter and punctuation perfect for duplicate detection to work.

The form can be used to query the AUTHORS and REFERENCES tables (but not the full database), but users see only the references that they themselves have actually entered, not all the references in these tables. This is because the form covers the UAUTHORS and UREFERENCES views of these tables, which are defined as follows -

```
CREATE VIEW UAUTHORS AS SELECT * FROM AUTHORS
WHERE ENTEREDBY = USER;
```

```
CREATE VIEW UREFERENCES AS SELECT * FROM REFERENCES
WHERE ENTEREDBY = USER;
```

This allows users to change a reference they have previously entered, but not to the extent that the identity of the reference is changed. In other words, you can correct spelling errors, or improve the punctuation or format, but you should not change 'Smith, 1994' to 'Jones, 1994'. Other users may have pointers to this reference and you are not free to delete the reference or change it completely. In fact, you will find that you cannot delete a reference using any form, nor from SQL*Plus. You can only remove a reference from your personal list of references using the Personal Keyword-Reference form.

AUTHORS BLOCK

The Authors block corresponds to the AUTHORS table, which has a record for each author in a reference. The maximum number of authors per reference is 99, which is set by the 2-digit precision of the author sequence number. The order in which the authors are displayed or printed is determined by this sequence number. Use the **TAB** to move down the author list and into the Reference Details block when the bottom of the list has been reached.

Authors- (AUTHOR) A mandatory field of up to 60 characters for a *single author* - with the *surname first in lower case except for the first letter*, followed by a *space*, a *comma* and the *initials with full stops* - for example, "Chowmondlier, K.L.". Most surnames have only the first letter in upper case, but there are exceptions - e.g., "de Luca", "MacDonald" and "Smythe-Higgins". Also, some surnames consist of more than one word - e.g. "Van Der Wall". Do not attempt to insert more than one author in a single record. (In a few AGSOREFS references this may occur in the last author record of references that have originated from pre-existing databases. This situation should be corrected when found.)

Sequence Number - (SEQUENCE) A mandatory positive integer of up to two digits indicating the order of the author in the reference's author list. This field is automatically inserted by a form trigger during the entry of authors. For each reference the sequence number starts at one, and it advances by one for each additional author in the reference. The field can be updated so that the order of the authors in a reference's author list can be changed. Note that the author sequence number is needed because relational databases do not generally preserve the order in which the records were originally entered into a table.

REFERENCE DETAILS BLOCK

The Reference Details block relates mainly to the REFERENCES table, which uses the system-supplied Reference ID as its primary key and link with the AUTHORS table. The block also has a field for a User-Supplied Reference ID from the REFUSERS table and a 'non-database' field for saving a reference for copying with **DUPLICATE RECORD**.

Year - (YEAR) An optional 4-digit integer for the year the reference was published - normally just a 4-digit figure such as '1994'. You cannot add letters to the end of the year if there is more than one reference by the same author(s) in the one year. Although used in published lists of references, this convention is not appropriate to a shared corporate reference system.

Reference ID - (REFID) A 9-character mandatory field for the system-supplied unique ID for each reference. Primary key to the REFERENCES table. This ID, which is stored as a foreign key in the AUTHORS table, consists of an asterisk followed by a monotonically increasing integer. At the time of writing this ID has reached '*11537'. This field can only be accessed in query mode.

Alternative ID - (ALTID in the REFUSERS table) An optional field of up to 16 characters for any ID the user may wish to attach to the reference - a reprint number, for example. Note that this field is not part of the REFERENCES table - it belongs in the user's private list of reference IDs contained in REFUSERS table, and is automatically placed there by a pre-insert trigger in this form. A number of private user-supplied IDs can be associated with the one reference. The field is included in this form to simplify the entry procedure - all relevant information can be entered from the one form.

Entered By - (ENTEREDBY) A mandatory 8-character field for the Oracle user ID of the person entering the reference. The value for this field is automatically supplied by a pre-insert trigger. This field can only be navigated in query mode.

Entry Date - (ENTRYDATE) A mandatory date field - in the standard Oracle format of 'DD-MON-YY' - for the date the reference is entered into the database. The correct date is automatically inserted into this field by a pre-insert trigger. This field can only be navigated in query mode.

Title - (TITLE) An optional field of up to 1024 characters for the title of a reference. In the instance of the symposium type of reference, where a paper is one of many in a named and/or edited collection of articles, the name of the symposium (or conference, special volume, etc) should be placed in the Source field, not the Title. Text enhancements, such as italics, can be included in the titles of references printed by the reference report program (see section 14) by bracketing the text to be enhanced with the following characters :

Enhancement	Character	Example	Result in Reports
Italic	_	_Daonella_	<i>Daonella</i>
Superscript	^	Fe^3+^	Fe ³⁺
Subscript		HI2 O	H ₂ O

If an enhancement is not cancelled by a second enhancement character it will affect the rest of the title. The most common requirement for text enhancement in geoscience titles is the italicisation of taxonomic fossil names.

Source - (SOURCE) A mandatory field of up to 1024 characters for the 'source' of the reference (e.g., 'Australian Geological Survey Organisation Record'), which is often a journal name. For monograph (book) references this field is for the publisher (e.g., 'Elsevier, Amsterdam'). In symposium-style references the name(s) of the editor(s) often precedes the symposium name - e.g., 'In: Smith, S.S. (Editor), Conference on ...'. Note that italics (or underlining, bold, etc) can only be represented in the title field.

Volume or Part - (VOLPART) An optional field of up to 36 characters for the volume, issue or part of a serial reference. If both the volume and issue numbers are included, then the issue number should be placed in brackets after the volume number - e.g., '35 (3)'. Special volumes may have an alphanumeric volume ID - e.g., 'Sam Carey Special Volume' - hence the length of the field.

Pages - (PAGES) An optional field of up to 36 characters for the page range of articles in serials (e.g., '47-54'). For monographs, the total number of pages (e.g., '39pp') is not required by the AGSO standard.

Save Details - (non-database field) Check this one-character field with an 'X' to save the current reference details for duplication. When entering a series of articles from the same source, you may then copy the saved details with the ***DUPLICATE RECORD*** function key (with the cursor in the Authors block).

9 - SINGLE-AUTHOR QUERY FORM

VT220 Terminal to AViiON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS - AGSO'S SHARED BIBLIOGRAPHIC DATABASE - SINGLE-AUTHOR QUERY FORM

Author	Seq	Ref.ID	Alt.ID	Year	Title
Laurie J.R.	4	*11009	>L06977	>1994	>Phylogenetic analysis and class
Laurie J.R.	4	*1474	>L02788	>1985	>The Cambrian System in Australi
Laurie J.R.	2	*18	>L00054	>1980	>Lithostratigraphy and biostrati

Authors Seq

Bassett M.G.	1
Holmer L.E.	2
Popov L.E.	3
Laurie J.R.	4

Reference Details

Year	Entered	By	Ref.Id
1994	18-JUL-94	JLAURIE	*11009
Title			
Phylogenetic analysis and classification of the Brachio			
poda - reply and comments			
Source			
Lethaia			
Vol/Part26			
Pages385-386			

You MUST query the database before adding a new reference. To add a new reference move to the Ref Detail block and then press Insert Record.

Pick list available. Enter a search clue (e.g. 'Gerono') then press LIST.

Count: 5 ^ v <List><Replace>

Figure 6. The Single-Author Query form.

This form was designed for fast single-author queries of the entire AGSOREFS database and for adding references already in the database to your personal list. With this form you can query the database by Author, Sequence, Reference ID, Alternative (user-supplied) ID, Year and Title - as well as via the Complex-Query form (see Section 10). After querying the database you may then insert a new reference via the Reference Insert/Update form (see Section 8), which you invoke by moving the cursor into the Reference Details block and pressing **INSERT RECORD**. You may obtain the Complex-Query form for multi-author queries by pressing **ENTER QUERY** with the cursor in the same block.

The form has three blocks, of which the Authors and Reference Details blocks are similar to those in the Reference Insert/Update form, and need not be re-described. The top block, in which most queries are performed, has one line per reference and displays up to three references. A query in the top block - say by author - will often bring up a number of references. As the cursor is moved from record to record in the top block, the full author list and other details of each reference are displayed in the bottom two blocks.

TOP BLOCK

The top block corresponds to the AGSOAUTHS view, but includes fields derived from the REFUSERS table and the AGSOREFS view. The derived fields are indicated by the '>' symbol in front of them. You may navigate to any top block field to compose a query, but queries involving derived fields (e.g., Title) are sometimes quite slow (minutes) to execute.

Author - (AUTHOR) As in the Reference Insert/Update form, but for query only.

Sequence Number - (SEQUENCE) As in the Reference Insert/Update form, but for query only.

Reference ID - (REFID) A 9-character query-only field for a system reference ID. Those coming from the AUTHORS table consist of an asterisk plus an integer (e.g., '*11510'), while those from GEODX have a variety of formats, but are never preceded by an asterisk and are typically composed of a year followed by a slash and a number (e.g., '89/26413').

Alternative ID - (ALTID in the REFUSERS table) This optional field is for a user-supplied reference ID of up to 16 characters. You may enter and commit your own reference IDs using this field, and the appropriate record will automatically be inserted into your private list in the REFUSERS table. Different users can have different Alternative IDs attached to the same reference.

Year - (YEAR in the AGSOREFS view) As described in the Reference Insert/Update form, but for query only.

Title - (TITLE in the AGSOREFS view) As described in the Reference Insert/Update form, but for query only.

10 - COMPLEX QUERY FORM

AGSOREFS Database - Complex-Query Form			
Authors:		Snr	Auth
Chaproniere%			<input checked="" type="checkbox"/>
Pigram%			
Year	1993	Ref. Id	Other Id
Title			
Source			
Volume/part			
Pages			
Press EXECUTE-QUERY to retrieve references. WARNING: about 22 references may be retrieved QUICKLY based on author queries - make author queries as specific as possible.			

Figure 7. The Complex Query form

This pop-up complex-query form, typically used for multi-author queries, can be called from all reference query forms by first placing the cursor in the Reference Details block and pressing **ENTER QUERY**. After entering the query specifications into the above form, and pressing **EXECUTE QUERY**, the results are then displayed back in the calling form. In the two keyword-reference forms there is a special one-character field into which an 'X' can be entered to engage this form. With this form, multiple-author queries are usually much faster (but still slow) than single author queries, which can take up to two minutes to yield results. In general, the fewer the references retrieved the faster the results are obtained.

To perform a query, enter the selection criteria into the form, then press **EXECUTE QUERY**. Check the senior-author box with an 'X' if you wish to specify the first author as the senior author. The form employs two methods of executing the query - fast and slow. If more than about 22 references are retrieved via the fast method, then the slow method is engaged after you answer **Y** to the following prompt :

References Alert
The query criteria are too general. Retrieval may take some time. Do you want to proceed with this query?
Yes or No: <input type="checkbox"/> NO

However, the better course of action is usually to enter **N** and re-query with more specific selection criteria.

11 - PERSONAL KEYWORD-REFERENCE FORM

VT220 Terminal to AViiON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS: AGSO'S SHARED-REFERENCE DATABASE - PERSONAL KEYWORD-REFERENCE FORM

Query: Simple ☐ Complex ☐

Ref. ID: *571 Alt. ID: L02544 Oracle User: JLAURIE Date Entered: 18-JUL-94

Kwrd No.	Keyword	Entered -	By
4554	Siberia	19-JUL-94	JLAURIE
5132	USSR	19-JUL-94	JLAURIE
13507	trilobite	19-JUL-94	JLAURIE
6338	biostratigraphy	19-JUL-94	JLAURIE
2743	Lower Cambrian	19-JUL-94	JLAURIE
3802	Middle Cambrian	19-JUL-94	JLAURIE

W To query by
O multiple key-
R words, move
D to Keyword
S field, press
| EnterQuery

Authors	Seq	Entered -	By	Ref. ID
Bognibova R.T.	1	Year 1983	17-NOV-93	JLAURIE *571
UPegel T.U.	2	Title Razrez pogranych otlozheniy Nizhnego i Sredn		
TShcheglov A.P.	3	ego Kembriya Batenevskogo Kryazha i khr. Azyr-Tal		
		Source Trudy Instituta Geologii i Geofiziki		
		Vol & Part 548	Pages 71-82	

The database must be queried before a new reference can be added

Count: *1 <Replace>

Figure 8. The Personal Keyword-Reference form

This form allows you to manage your own references and keywords without having to worry about other people's data. You *must* use this form if you wish to attach keywords to references. You can query the entire database by using either of the single character boxes at the top left of the form - just enter 'X' followed by **ENTER**. The 'Simple' box engages the single-author query form described in Section 9, and the 'Complex' box gets you the complex-query form described in Section 10. On completion of a simple or complex query the above form is reinstated with the selected reference in view.

If you wish to add an existing reference to your private list you must first query the database by either of the two methods described above, so that the required reference is displayed in the Authors and Reference-Details blocks. With the cursor in the top block press **INSERT RECORD** and optionally enter a user-supplied ID for the displayed reference. Commit the record with **ACCEPT**. The other fields are automatically added to the REFUSERS table.

A new reference can also be inserted into AGSOREFS - after querying the database - by placing the cursor in the 'Refs' block (use **PREVIOUS BLOCK** if in the Refusers [top] block) and pressing **INSERT RECORD**. This engages the Reference Insert/Update form - in the same way as the Single-Author Query form (see Section 9).

REFUSERS BLOCK

This block, which corresponds to the UREFUSERS view of the REFUSERS table, contains your personal list of Reference IDs with their Alternate IDs. You are free to insert, update and delete all 'ownership' records displayed in this block, as they belong to you and nobody else. The 'Entered By' and 'Entry Date' are automatically inserted by a pre-insert trigger in the form.

Reference ID - (REFID) A mandatory field of up to 9 characters for the system reference ID. Those from the AUTHORS table are an asterisk plus integer (e.g., '*11510'), while those from GEODX have a variety of formats, but never preceded by an asterisk, and typically a year followed by a slash and a number (e.g., '89/26413'). The Ref. ID must point to an existing reference in the AGSOREFS union view, otherwise an error message will result.

Alternative ID - (ALTID) Up to 16 characters for an optional, alternative, user-supplied ID for the reference. Users may have an existing reprint number, or card numbering system they wish to use for this purpose. Any combination of letters and numbers may be entered, but the ID must be unique to the user. Note that other users may attach their own Alternative IDs to the same references, but you only get to see them in the General Keyword-Reference Query form.

Oracle User - (USERID) A mandatory 8-character field for the Oracle user ID of the person entering the ownership record into the REFUSERS table. A value for this field is automatically supplied by a pre-insert trigger. This field can only be navigated in query mode.

Date Entered - (ENTRYDATE) A mandatory date field - in the standard Oracle format of 'DD-MON-YY' - for the date the record is entered into the REFUSERS table. The correct date is automatically inserted into this field by a pre-insert trigger. This field can only be navigated in query mode.

KEYWORDS BLOCK

The Keywords block, which corresponds to the UKEYREFS view of the KEYREFS table, displays only those keywords that belong to you. If you want to use other people's keywords for querying purposes, then you must use the General Keywords-Reference Query form. The records displayed in this block are yours to use as you like.

Keyword Number - (WORDNO) A mandatory positive integer field of up to 5 digits for the number of the keyword in the KEYWORDS table. The keyword itself is automatically displayed in the next field by a post-change trigger.

Keyword - (WORD in the KEYWORDS table) This 64-character derived field is for the name of the keyword identified by number in the previous field. You may enter one of your existing keywords into this field and the number is automatically inserted into the previous field. Alternatively, you can enter a search clue like 'strat' (without the '%' wild card) and press the **LIST** function key. You may then select the required word from the resulting pop-up list of keywords starting with 'strat...'. If you enter a word *not* in the list of *your* words in the KEYWORDS table (e.g., 'project management') you will be prompted by the following pop-up alert box :

References Alert
"project management" not found in your personal GEOREF KEY list. Do you want to add it to the table now?
Yes or No: <input type="checkbox"/> NO

Answer 'YES' if you wish to add the word to the KEYWORDS table. Be careful, though, that you are not just entering a spelling variant of an existing keyword. It is better to back out and check, rather than say yes blindly.

Entered - (ENTRYDATE) A mandatory date field - in the standard Oracle format of 'DD-MON-YY' - for the date the record is entered into the KEYREFS table. The correct date is automatically inserted into this field by a pre-insert trigger. This field can be navigated only in query mode.

By - (OWNER) A mandatory 8-character field for the Oracle user ID of the person entering the record into the KEYREFS table. A value for this field is automatically supplied by a pre-insert trigger. This field can be navigated only in query mode.

12 - GENERAL KEYWORD-REFERENCE QUERY FORM

VT220 Terminal to AViiON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS: AGSO'S REFERENCE DATABASE - GENERAL KEYWORD-REFERENCE QUERY FORM

Query: ☐ Simple ☐ Complex

Ref. ID: *10028 Alt. ID: L06386 Oracle User: JLAURIE Date Entered: 18-JUL-94

Kwd No.	Keyword	Entered -	By
14923	Globorilus	19-JUL-94	JLAURIE
17670	Globosochonetes	19-JUL-94	JLAURIE
17901	Globosoproductus	19-JUL-94	JLAURIE
19623	Globocassidulina canalisaturat	19-JUL-94	GCHAPRON
19624	Globocassidulina nipponica	19-JUL-94	GCHAPRON
19624	Globocassidulina nipponica	19-JUL-94	GCHAPRON

Authors: Afanasyeva G.A. Seq: 1

Year: 1988 Title: Brakhiopody Otryada Chonetida

Source: Trudy Paleontologicheskogo Instituta

Vol & Part: 228 Pages: 123p

The database must be queried before a new reference can be added

Count: 6 <List><Replace>

Figure 9. The General Keyword-Reference Query form

Although similar in appearance to the previous form, this form is designed to let you query the entire database with anyone's keywords, not just your own. You also get to see everyone's user-supplied (alternative) reference IDs. The form cannot be used to insert, update or delete keywords or reference-ownership records. Instead of relating to the updateable views of the tables, the top block of this form corresponds to the REFUSERS base table and the Keywords block to the KEYREFS base table.

In the above example (Fig. 9) you see the results of querying the database with a single keyword stub. **ENTER QUERY** was pressed with the cursor in the Keyword Number field, the query clue 'Globo%' was placed in the Keyword field, and **EXECUTE QUERY** was pressed. Keywords and reference ownership records belonging to both 'JLAURIE' and 'GCHAPRON' were retrieved. As the cursor is moved down the Keywords block the corresponding reference ownership record is displayed in the top block. The same keyword may occur many times under different ownership, but once only in the private list of a given user. Thus, both GCHAPRON and JLAURIE have their own copies of the keyword 'Siberia'. In the above example, GCHAPRON has at least two references attached to the keyword 'Globocassidulina nipponica'.

13 - KEYWORDS-ONLY FORM

Word#	Keyword (32 Char)	Parent	Entered	By
4417	Sardinia		02-DEC-93	JLAURIE
4418	Sardoredlichia		02-DEC-93	JLAURIE
4419	Sargaella		02-DEC-93	JLAURIE
4420	Sarganostega		02-DEC-93	JLAURIE
4421	Sarkia		02-DEC-93	JLAURIE
17929	Sarytcheviella		02-DEC-93	JLAURIE
17038	Satpakella		02-DEC-93	JLAURIE
4422	Saucrorthis		02-DEC-93	JLAURIE
4423	Saudi Arabia		02-DEC-93	JLAURIE
16037	Saughina		02-DEC-93	JLAURIE
4424	Saukia		02-DEC-93	JLAURIE
4425	Saukianda		02-DEC-93	JLAURIE
4426	Saukiandops		02-DEC-93	JLAURIE
4427	Saukiella		02-DEC-93	JLAURIE
4428	Saukrodictya		02-DEC-93	JLAURIE
4429	Sayanella		02-DEC-93	JLAURIE
4430	Sayramaspis		02-DEC-93	JLAURIE
15965	Scabriscutellum		02-DEC-93	JLAURIE
17127	Scalites		02-DEC-93	JLAURIE

Count: 79 ^ v <Replace>

Figure 10. The Keywords-Only form

The Keywords-Only form allows users to see *all* keywords, and to insert, update and delete their *own* keywords. The form accesses both the KEYWORDS base table and the UKEYWORDS updateable view. The inclusion of a 'parent pointer' in the KEYWORDS table allows the user to set up a hierarchy of terms (e.g., phylum, class, order, family, genus and species). Although none of the other AGSOREFS forms yet take advantage of this feature, SQL*Plus has the syntax for hierarchical retrievals, and the potential exists for future enhancements to the functionality of the keyword system.

When using this form to query the KEYWORDS table, you will normally see just your own keywords. This is because your Oracle username is automatically inserted into the 'By' column whenever **ENTER QUERY** is pressed. If you delete this field before pressing **EXECUTE QUERY**, all the keywords in the KEYWORDS table can then be accessed - not just yours. You can delete a keyword only when all the reference links to it have been removed from the KEYREFS table - using the Personal Keyword-Reference form. Attempting to do otherwise displays a message telling you how many references currently access the keyword.

Keyword Number - (WORDNO) A mandatory positive integer field of up to 5 digits for the number of the keyword - the primary key to the KEYWORDS table. When entering new keywords the field is automatically supplied by a pre-insert trigger in the form.

Keyword - (WORD) A mandatory field of up to 40 characters for the name of the keyword identified by number in the previous field. The word (or words - a 'keyword' can be composed of more than one word) entered here must be unique to the user - this is enforced by a validation trigger in the form. The conventions you apply to your keywords are entirely up to you.

Parent Pointer - (PARENT) An optional field for a positive integer of up to 5 digits pointing to the parent keyword number in the same table (recursive pointer). For example, the species keyword 'sapiens' would point to the number of the parent genus keyword 'Homo'. The Parent Pointer may only be set to a keyword already in the KEYWORDS table. This pointer overlays the table with a hierarchical or tree structure.

Name Parent - (non-database field) An optional field of up to 32 characters for the name of the parent keyword. This field is automatically filled from the parent pointer by a post-change trigger. It is not part of the base table or view. A pointer can be inserted by entering the name of the parent keyword into this field, and a validation trigger ensures that the name already exists in the table. A list of keywords can be obtained with the LIST function - preferably after entering a search clue into the field.

Entered - (ENTRYDATE) A mandatory date field cast in the standard Oracle format of 'DD-MON-YY' for the date the keyword is entered into the KEYWORDS table. The correct date is automatically inserted into this field by a pre-insert trigger. This field can only be navigated in query mode.

By - (OWNER) A mandatory 8-character field for the Oracle user ID of the person entering the keyword into the KEYWORDS table. This field defaults to the current user's Oracle name. It is automatically inserted by a pre-insert trigger when a record is committed. The field can be navigated only in query mode.

14 - REFERENCES REPORT PROGRAM

```

VT220 Terminal to AViiON
File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help
AGSOREFS DATABASE - REPORT PROGRAM - SELECTION MENU

1 - Name of output file ----- refrep.lis
2 - Select by Reference ID -----
3 - Select by YEAR -----
4 - Select by REFUSERS pointer owner - JLAURIE
5 - Select by SOURCE -----
6 - Select by TITLE -----
7 - Select by Volume/Part -----
8 - Select by AUTHOR ----- Both Chaproniere%,Pigram%
9 - Select by Author SEQUENCE No ----
10 - Select by KEYWORD -----
11 - Other (eg, AGSOAUTHS.SEQUENCE = 1)

12 - Sorting clause - ORDER BY AGSOREFS.REFID
13 - Output keywords ----- Yes
14 - Output in RTF (WinWord) format --- Yes
15 - Output personal references only -- No

G - Go      X - Exit

CHOOSE BY NUMBER OR LETTER : G_

```

Figure 11. The AGSOREFS Reference Report menu

Item 6 in the AGSOREFS menu is a reference reporting program that formats and retrieves references using a variety of retrieval criteria. Output is directed to the specified UNIX file on the AViiON server in plain ASCII or 'rich text format' (Microsoft's RTF document interchange format). The latter can be imported, complete with fonts and text enhancements (e.g., italics), directly into a variety of word-processors (e.g., Microsoft's Word for Windows). Use a PC file-transfer program like Novell's Rapid Filer to transfer output files from your AViiON directory to your PC hard disk. A sample of RTF output follows :

- *10083 003401 Chaproniere, G.C.H. & Pigram, C.J., 1993. Miocene to Pleistocene foraminiferal biostratigraphy of dredge samples from the Marion Plateau, offshore Queensland, Australia. AGSO Journal of Australian Geology & Geophysics, 14, 1-19.
[Keywords: Foraminiferida, Planktic Foraminiferida, Larger Foraminiferida, Miocene, Pliocene, Pleistocene, Marion Plateau, Queensland, Coral Sea, Biostratigraphy]
- *8120 003095 Pigram, C.J., Davies, P.J., Feary, D.A., Symonds, P.A. & Chaproniere, G.C.H., 1990. Controls on the Tertiary carbonate platform evolution in the Papuan Basin: new play concepts. In: Carmen, G.J. & Carmen, Z. (Editors), Proceedings of the First PNG Petroleum Convention, Port Moresby, 12-14th February, 1990, 185-195.
[Keywords: Papua New Guinea, Sedimentation, Carbonate Platforms, Miocene, Tectonics, Oligocene, Palaeoclimates, Paleogeography, Coral reefs, Oil plays]

15 - KEYWORDS REPORT PROGRAM

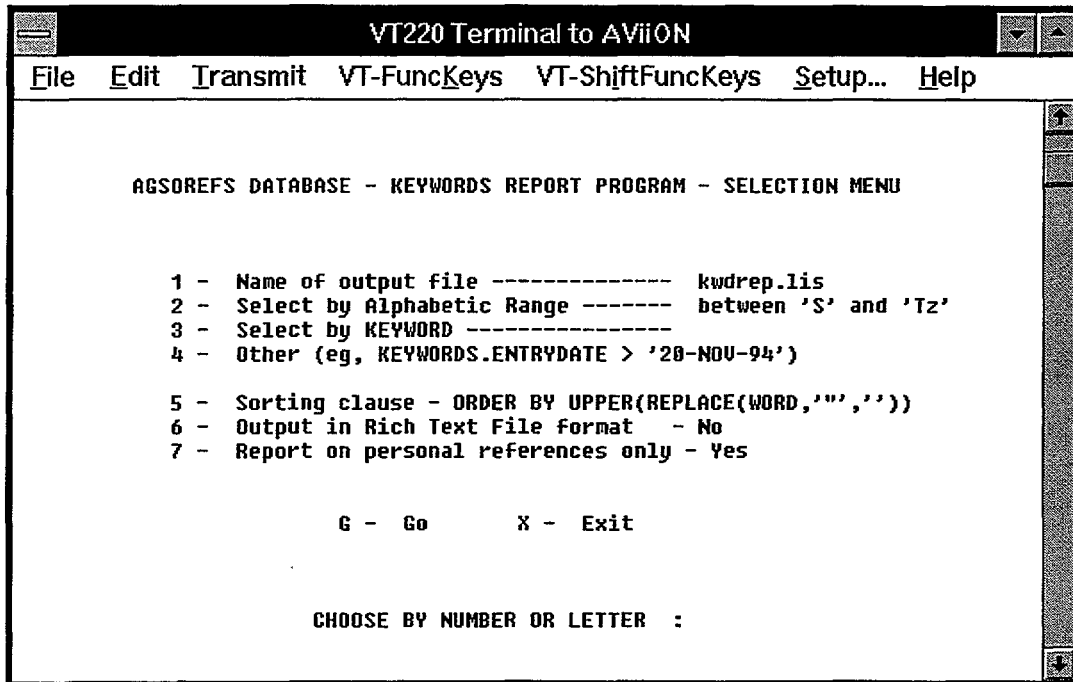


Figure 12. The AGSOREFS Keywords Report menu

Item 7 of the AGSOREFS menu is a keyword reporting program that lists the selected keywords to the screen or specified AViiON file. As with output of references, this can be in plain ASCII or rich text format. Here is a sample of the keyword output from this program with the above selection criteria :

12189 saamica	12223 salairica	12253 sandoverensis
12190 saaminica	12224 salairicus	4407 Sandoveria
12191 saba	4393 Salanacus	16516 sanduense
12192 sabrinae	12225 salancaniensis	12254 sanduensis
12193 sabulon	4394 Salankanaspis	4408 Sanduhedinaspis
12194 sabulosa	4395 Salanyella	4409 Sanduspis
12195 sabulosus	15379 Salanygolina	12255 sanfangensis
12196 sabus	16365 Salanytheca	14542 sanhuangshanensis
12197 saccatum	12226 salax	4410 Sanhuangshania
4378 Sacciconus	227 salebra	12256 sanhwaichangensis
4379 Sacciella	2228 salebrosa	15157 Sanjuanella
4380 Saccogonum	14323 salebrosus	17568 sanjuanensis
4381 Sacha	12229 salemensis	12257 sanlucasensis
14368 sachaica	18070 salemi	12258 santaquinensis
4382 Sachaspis	12230 salinity toler.....	

16 - ACKNOWLEDGMENTS

We are indebted to Mirek Kucka, Database Administrator, for the idea of creating a union between GEODX and the rest of AGSOREFS. Thanks are also due to Sonja Lenz, Cathy Brown, George Chaproniere and John Laurie for their suggestions and help during development and testing of AGSOREFS. Figure 2 was adapted from a diagram by Sonja Lenz. This Record has benefitted greatly from reviews by Ian Hodgson, John Laurie and Sonja Lenz.

17 - REFERENCES

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- Ryburn, R.J., Knutson, J., Duggan, M.B., Bond, L.D. & Richards, J.R., 1994. Users' guide to PETROG: AGSO's petrography database. Australian Geological Survey Organisation, Record 1994/36.

APPENDIX A- AGSOREFS DATABASE DEFINITIONS

```
*****
***  SCHEMA FOR THE AGSO CORPORATE REFERENCE DATABASE SYSTEM  ***
*****
```

REM THE MAIN REFERENCES TABLE

```
CREATE TABLE REFERENCES (
    REFID      VARCHAR2(9)      NOT NULL  PRIMARY KEY,
    OTHERID    VARCHAR2(16),
    YEAR       NUMBER  (4,0),
    TITLE      VARCHAR2(1024),
    SOURCE     VARCHAR2(1024)  NOT NULL,
    VOLPART    VARCHAR2(36),
    PAGES      VARCHAR2(36),
    ENTEREDBY  VARCHAR2(8),
    ENTRYDATE  DATE );
```

GRANT SELECT ON REFERENCES TO PUBLIC;

```
CREATE UNIQUE INDEX REFNOS  ON REFERENCES ( REFID )
CREATE          INDEX REFOTHER ON REFERENCES ( OTHERID )
CREATE          INDEX REFUSER ON REFERENCES ( ENTEREDBY )
```

```
CREATE VIEW UREFERENCES AS SELECT * FROM REFERENCES
    WHERE ENTEREDBY = USER;
```

GRANT SELECT, INSERT, UPDATE ON UREFERENCES TO PUBLIC;

REM VIEW LINKING GEODX REFERENCES TO THE GEOREF.REFERENCES TABLE

```
CREATE VIEW AGSOREFS AS (
    SELECT REFID, OTHERID, ENTEREDBY, ENTRYDATE,
           YEAR, TITLE, SOURCE, VOLPART, PAGES
    FROM GEOREF.REFERENCES
    UNION
    SELECT CD_ARTICLE, 'GEODX Reference', 'GEODX', DT_PROCESS,
           DT_PUBLICATION, TX_TITLE, NAME_PUBLICATION,
           NO_VOLPART, SUBSTR(NAME_PAGE,1,36)
    FROM GEODX.ARTICLE, GEODX.PUBLICATION, GEODX.SOURCE
    WHERE PUBLICATION.ID_PUBLICATION = SOURCE.ID_PUBLICATION
    AND   SOURCE.ID_SOURCE = ARTICLE.ID_SOURCE );
```

GRANT SELECT ON AGSOREFS TO PUBLIC;

REM THE MAIN AUTHORS TABLE

```
CREATE TABLE AUTHORS (  
    REFID      VARCHAR2(9)    NOT NULL,  
    AUTHOR     VARCHAR2(60)   NOT NULL,  
    SEQUENCE   NUMBER (2,0)  NOT NULL,  
    ENTEREDBY  VARCHAR2(8)    NOT NULL,  
    ENTRYDATE  DATE           NOT NULL );
```

GRANT SELECT ON AUTHORS TO PUBLIC;

```
CREATE INDEX AUTHREFIDS ON AUTHORS ( REFID );  
CREATE INDEX AUTHAUTHORS ON AUTHORS ( AUTHOR );  
CREATE INDEX AUTHUSERS ON AUTHORS ( ENTEREDBY );
```

```
CREATE VIEW UAUTHORS AS SELECT * FROM AUTHORS  
    WHERE ENTEREDBY = USER;
```

GRANT SELECT, INSERT, UPDATE, DELETE ON UAUTHORS TO PUBLIC;

REM VIEW LINKING GEODX AUTHORS TO THE GEOREF.AUTHORS TABLE

```
CREATE VIEW AGSOAUTHS AS (  
    SELECT REFID, AUTHOR, SEQUENCE, ENTEREDBY  
    FROM GEOREF.AUTHORS  
    UNION  
    SELECT CD_ARTICLE, NAME_AUTHOR, ORDER_SEQUENCE, 'GEODX'  
    FROM GEODX.AUTHOR, GEODX.ARTICLE_AUTHOR  
    WHERE AUTHOR.ID_AUTHOR = ARTICLE_AUTHOR.ID_AUTHOR );
```

GRANT SELECT ON AGSOAUTHS TO PUBLIC;

REM VIEW COMBINING ALL REFERENCE DATA INTO A SINGLE RECORD -
REM ONE RECORD TO ONE AUTHOR

```
CREATE VIEW WHOLEREF AS (  
    SELECT AGSOREFS.REFID, AUTHOR, YEAR  
    FROM AGSOREFS, AGSOAUTHS  
    WHERE AGSOAUTHS.REFID = AGSOREFS.REFID );
```

GRANT SELECT ON WHOLEREF TO PUBLIC;

REM TABLE POINTING TO THE REFERENCES IN USERS' PERSONAL DATABASES

```
CREATE TABLE REFUSERS (
    REFID      VARCHAR2(9)    NOT NULL,
    ALTID      VARCHAR2(16),
    USERID     VARCHAR2(8)    NOT NULL,
    ENTRYDATE  DATE           NOT NULL );
```

GRANT SELECT ON REFUSERS TO PUBLIC;

```
CREATE INDEX REFUSERSREFID  ON REFUSERS ( REFID );
CREATE INDEX REFUSERSUSERIDS ON REFUSERS ( USERID );
```

```
CREATE VIEW UREFUSERS AS SELECT * FROM REFUSERS
    WHERE USERID = USER;
```

GRANT SELECT, INSERT, UPDATE, DELETE ON UREFUSERS TO PUBLIC;

REM THE PERSONAL KEYWORDS TABLE

```
CREATE TABLE KEYWORDS (
    WORDNO     NUMBER (5)     NOT NULL PRIMARY KEY,
    WORD       VARCHAR2(40)   NOT NULL,
    PARENT     NUMBER (5),
    OWNER      VARCHAR2(8)    NOT NULL,
    ENTRYDATE  DATE           NOT NULL );
```

GRANT SELECT ON KEYWORDS TO PUBLIC;

```
CREATE UNIQUE INDEX KEYWORDNOS  ON KEYWORDS ( WORDNO );
CREATE          INDEX KEYWORDSWORDS ON KEYWORDS ( WORD );
CREATE          INDEX KEYWORDOWNERS ON KEYWORDS ( OWNER );
```

```
CREATE VIEW UKEYWORDS AS SELECT * FROM KEYWORDS
    WHERE OWNER = USER;
```

GRANT SELECT, INSERT, UPDATE, DELETE ON UKEYWORDS TO PUBLIC;

REM THE TABLE LINKING KEYWORDS TO REFERENCES

```
CREATE TABLE KEYREFS (  
    REFID      VARCHAR2(9)    NOT NULL,  
    WORDNO     NUMBER (6)     NOT NULL,  
    OWNER      VARCHAR2(8)    NOT NULL,  
    ENTRYDATE  DATE           NOT NULL );
```

GRANT SELECT ON KEYREFS TO PUBLIC;

```
CREATE INDEX KEYREFSREFIDS ON KEYREFS ( REFID );  
CREATE INDEX KEYREFSWORDNOS ON KEYREFS ( WORDNO );  
CREATE INDEX KEYREFSOWNERS ON KEYREFS ( OWNER );
```

```
CREATE VIEW UKEYREFS AS SELECT * FROM KEYREFS  
    WHERE OWNER = USER;
```

GRANT SELECT, INSERT, UPDATE, DELETE ON UKEYREFS TO PUBLIC;

REM THE TABLE THAT KEEPS TRACK OF SYSTEM NUMBERS;

```
CREATE TABLE MAXNOS (  
    IDMAXNO    VARCHAR2(10)   NOT NULL,  
    MAXNO      NUMBER (6)     NOT NULL );
```

GRANT SELECT, UPDATE ON MAXNOS TO PUBLIC;

REM COPY OF THE REFERENCES TABLE FOR TEMPORARY LOADING USE ONLY

```
CREATE TABLE TREFERENCES (  
    REFID      VARCHAR2(9)    NOT NULL PRIMARY KEY,  
    OTHERID    VARCHAR2(16),  
    YEAR       NUMBER (4,0),  
    TITLE      VARCHAR2(1024),  
    SOURCE     VARCHAR2(1024) NOT NULL,  
    VOLPART    VARCHAR2(36),  
    PAGES      VARCHAR2(36),  
    ENTEREDBY  VARCHAR2(8),  
    ENTRYDATE  DATE );
```

GRANT SELECT, INSERT, UPDATE, DELETE ON TREFERENCES TO PUBLIC;

REM COPY OF THE AUTHORS TABLE FOR TEMPORARY LOADING USE ONLY

```
CREATE TABLE TAUTHORS (  
    REFID      VARCHAR2(9)    NOT NULL,  
    AUTHOR     VARCHAR2(60)   NOT NULL,  
    SEQUENCE   NUMBER (2,0) NOT NULL,  
    ENTEREDBY  VARCHAR2(8)    NOT NULL,  
    ENTRYDATE  DATE           NOT NULL );
```

GRANT SELECT, INSERT, UPDATE, DELETE ON TAUTHORS TO PUBLIC;

APPENDIX B - LOADING REFERENCES INTO AGSOREFS

If AGSOREFS is to fulfill its purpose as a unified reference database serving all AGSO databases, then all isolated reference tables currently attached to Oracle databases must be consolidated into AGSOREFS. Already processed are the former PALREFS database and all ROCKCHEM and OZCHRON references, but a number of other reference tables have yet to be transferred. This appendix, which is intended for developers rather than users, outlines the methods used. References can be transferred from almost any source.

For Oracle tables in which the authors of multi-author articles occupy separate fields or records, and the remainder of the references are properly parsed (split into components), then the problem is simply one of using SQL insert statements to transfer the references via temporary tables. The Production Environment tables TAUTHORS and TREFERENCES are provided for this purpose, but first make sure they are empty before using them. In this way you can ensure that all authors have been given their correct sequence numbers and reference IDs, and that the same Reference IDs are inserted in TREFERENCES. The reference IDs linking AUTHORS and REFERENCES are monotonically increasing integers prefixed by an asterisk (e.g. '*11372'). The following example of an insert statement was used to copy all 'first authors' (AUTHOR1) from PALREFS into TAUTHORS :

```
INSERT INTO TAUTHORS (REFID, AUTHOR, SEQUENCE, ENTEREDBY, ENTRYDATE)
  SELECT SUBSTR('*' || TO_CHAR(REFNUM + 11250),1,9),
         INITCAP(AUTHOR1), 1, SUBSTR(OWNER,1,8), SYSDATE
  FROM PALREFS.PALREFS WHERE NOT AUTHOR1 IS NULL;
```

Similar statements were used to transfer the 2nd, 3rd, 4th and 5th authors from PALREFS. Note the use of 'INITCAP' function to reduce the upper case PALREFS authors to lower case with leading capitals. When allocating reference IDs (starting at '*11251' in the examples given) be sure to leave a gap of 10 between the current highest ID in the REFERENCES table and the start of the reference IDs in TREFERENCES. This allows for other AGSO users who may be adding references between the time you check the highest reference ID and the time you actually load the authors and references. The following SQL statement was used to insert the remainder of the references into TREFERENCES :

```
INSERT INTO TREFERENCES (REFID,
  YEAR, TITLE, SOURCE, VOLPART, ENTEREDBY, ENTRYDATE)
  SELECT SUBSTR('*' || TO_CHAR(REFNUM + 11250),1,9),
         YEAR, TITLE1, TITLE2, TITLE3,
         SUBSTR(JOURNAL1 || JOURNAL2 || JOURNAL3 || PUBLISHR,1,255),
         VOLUME, SUBSTR(OWNER,1,8), SYSDATE
  FROM PALREFS.PALREFS;
```

When you are satisfied all references have been successfully inserted in the temporary tables with their correct reference IDs, you may then transfer them to their final destinations in the

AUTHORS and REFERENCES tables using similar but simpler SQL insert statements. The final task is to ensure the MAXNOS table is updated, as follows :

```
UPDATE GEOREF.MAXNOS SET MAXNO =
      (SELECT MAX (SUBSTR (REFID, 2, 8))
       FROM GEOREF.REFERENCES )
WHERE IDMAXNO = 'REFID';
```

References that are insufficiently broken down into their components are best processed by a PC reference reformatting program called RefForm, from AutoRef Systems (PO Box 4772, Kingston ACT 2604). The parsed output files from RefForm can then be loaded into AGSOREFS using Oracle Loader. References from ROCKCHEM and OZCHRON were handled this way. RefForm accepts as input files of references, including ASCII files and files from most popular word processing programs. Files downloaded from the DIALOG Information Retrieval Service can be also handled with the help of another program from AutoRef Systems called DialogAR.

Database references must first be extracted from their source tables - just as they would be for making up a published list of references of the author(s)-year-title-source sort. This can be done with an existing reporting program, or just with a SQL select statement. Punctuation is not critical, but it helps to have a '@' at the end of all titles, and references must be separated by blank lines. After extraction, reference lists are transferred from the DG AViiON to a PC using LAN-Workplace-for-DOS 'Rapid Filer' (or some such file transfer software), and RefForm is then run to parse the references into their components. RefForm's main menu should look similar to this when ready to process a reference list :

RF REFORM MAIN MENU			
1 Configuration Menu	4 Read Template File	7 Preview Output	
2 Input Options Menu	5 Template Editor	8 Go! - Restyle & Output	
3 Output Options Menu	6 View Input File	9 Terminate Program	

CURRENT SETTINGS			
Input	REFS1.INP	File Type	ASCII
Output	REFS1.OUT	File Type	Relational
Tpl File	AGSO.TPL	Delimiter	blank lines
Swapfile		Enhancmts	remove
Printer	HP LaserJet	CardMode	off BookMode off
Hangindt	1 Rtmarg 35	Top Marg	2 Bot Marg 5
	Page Num on	Page Len	3
smith W.W., Jones X.X., brown Y.Y. & green Z.Z., 1999. Snake oils. Journal of Essential Oils, 22, 44-55.			

STYLE TEMPLATE	
Choose by number <top> or letter <bottom> or press ESC to exit	

Figure 13. Main menu of the RefForm reference reformatting program, showing the settings for generating a file for loading into AGSOREFS.

Note that the reference template shown in the lower part of the menu is 'AGSO.TPL' with the authors set to lower case (this does the same as the SQL 'INITCAP' function), the commas removed from authors' surnames and all text enhancements removed. The input file is an ASCII file called REFS1.INP. The output file is set to REFS1.OUT and the output file type is set to 'Relational'. Although not shown in the main menu, the punctuation character marking the end of the title in input references has been set to '@' in menu 2, the 'Input Options menu'. This ensures that the title and source will be correctly parsed in output. If '@' is not present in the input file, set the title-ending parameter to a full stop.

Press 8 to generate a RefForm output file. The output file is in two parts, with all authors in the first part and the rest of all references in the latter part. The transition in the middle of the file looks like this :

```

299      1      Kinny P.D.
299      2      Black L.P.
299      3      Sheraton J.W.
300      1      Jagodzinski E.A.
301      1      Kinny P.D.
301      2      Black L.P.
301      3      Sheraton J.W.
302      1      Lanyon R.
302      2      Black L.P.
302      3      Seitz H-M.
303      1      Black L.P.

```

```

1
1986
Zircon xenocrysts from the Kambalda volcanics: age constraints and dir...
Earth and Planetary Science Letters
76

```

299-311

```

2
1981
Excess 40Ar in metamorphic rocks from Broken Hill, New South Wales.@
Earth and Planetary Science Letters
55

```

123-149

The number appearing before both authors and reference remainders is an interim reference ID number that starts at '1' and goes as far as there are references in the file (303 in this file). The second number before each author is the sequence number of each author ('1' for senior authors). The title and source fields can be as long as 255 characters. Upload this file to the AViiON with Rapid Filer, or some other ASCII file transfer program. Use 'vi' to split the file into two, with all the authors in one file and the rest of the references in the other. In the file containing the rest of the references it is necessary to append a '#' to the

end of each physical record in order to get Oracle Loader to recognise the end of each field. This can be done in 'vi' with the command ':1,\$s/\$/#'.

Now create control files to load the two files into TAUTHORS and TREFERENCES with Oracle Loader. The control file used to load OZCHRON authors was as follows :

```
LOAD DATA
INFILE AUTH1.OUT
BADFILE REF1.BAD
REPLACE
INTO TABLE GEOREF.TAUTHORS (
ENTEREDBY CONSTANT 'ROCKCHEM',
REFID      POSITION(1:4)    INTEGER EXTERNAL,
SEQ        POSITION(5:9)    INTEGER EXTERNAL,
AUTHOR     POSITION(10:80)  CHAR )
```

And that used to load the rest of the OZCHRON references :

```
LOAD DATA
INFILE REF1.OUT
BADFILE REF1.BAD
REPLACE
RECLLEN 500
CONCATENATE 8
INTO TABLE GEOREF.TREFERENCES
    FIELDS TERMINATED BY '#'
    TRAILING NULLCOLS
( ENTRYDATE CONSTANT '01-AUG-99',
  REFID      INTEGER EXTERNAL,
  YEAR       CHAR,
  TITLE      CHAR,
  SOURCE     CHAR,
  VOLPART    CHAR,
  ENTEREDBY  CHAR,
  PAGES      CHAR,
  OTHERID    CHAR )
```

The reference IDs must now be adjusted via SQL update statements :

```
UPDATE TAUTHORS    SET REFID =
    SUBSTR(' ' || TO_CHAR(REFID + 11054),1,9);

UPDATE TREFERENCES SET REFID =
    SUBSTR(' ' || TO_CHAR(REFID + 11054),1,9);
```

The references may now be copied into their final destinations as in the PALREFS example. In this way references from almost any source can be added to AGSOREFS.

APPENDIX C - REFERENCES IN OTHER AGSO DATABASES

A standard method has been introduced for handling AGSOREFS references in the OZROX (Ryburn et al., 1993a), PETROG (Ryburn et al., 1994) and OZCHRON (Ryburn et al., 1993b) databases. The following OZCHRON example shows the the U-Pb SHRIMP form with the cursor positioned in the 'Ref. ID' field of the Analytical Results block :

VT220 Terminal to AViiON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

OZCHRON DATABASE - U-Pb SHRIMP FORM

POOLED RESULTS ----- press NEXT BLOCK for Analytical Results

~Rec#	Originator	Site ID	Sample ID	Age(Ma)	2SD	LI age	2SD
4	37 >Page, R.W.	77205009	77205009	1900	14		

Comments This 207/206 age is based on averaging 11 of the most concordant dat

ANALYTICAL RESULTS ----- press PREVIOUS BLOCK for Pooled Results

~Rec. No.	~Anal. No.	Ref. ID	Pb208*/Pb206*	Std Dev.
4	53	*11117	.0374	.0008
Order No. 1			Pb207*/Pb206*	.1188
Lab. No.			Pb206*/U238	.342
Grain No. 3			Pb207*/U235	5.602
Spot No. 1			Pb208*/Th232	.1039
U ppm 371			Min 207/206 age	
Th ppm 45			Pb206/U238 age	
Th/U .12			Pb207/U235 age	
Pb204 ppb			Pb208/Th232 age	
Pb206/Pb204 (meas) 100000				
f % .02				

~ = allocated automatically

Comments

Press LIST for Bibliographic Reference Form

Count: 1 v <List><Replace>

Figure 14. The U-Pb SHRIMP form in the OZCHRON database. Note the message displayed when the cursor is in the 'Ref ID' field.

You can now invoke the Single-Author Query form by pressing the **LIST** function key whenever the cursor is in an AGSOREFS Reference ID field. If a valid Reference ID is present, it is passed to that form and the full reference is displayed as shown in Figure 15. Otherwise, AGSOREFS may be queried and the correct Reference ID selected for returning to the calling form. If the required reference cannot be found in AGSOREFS it may be entered via the Reference Insert/Update form (see Section 8). If you select or enter a new reference while in the AGSOREFS forms, the following alert box appears on pressing **EXIT**, and before the new Ref. ID is automatically inserted into the calling form :

References Alert

Do you wish to insert AGSOREFS Reference ID '*11537' in the calling form?

Yes or No: YES

In this way the AGSOREFS database can be used as a sort of insertable pick list. This procedure will eventually be applied to all AGSO Oracle databases needing links to AGSOREFS references.

VT220 Terminal to AViiON

File Edit Transmit VT-FuncKeys VT-ShiftFuncKeys Setup... Help

AGSOREFS - AGSO'S SHARED BIBLIOGRAPHIC DATABASE - SINGLE-AUTHOR QUERY FORM

Author	Seq	Ref.ID	Alt.ID	Year	Title
Page, R.W.	1	*11117		1988	Age of the Barramundi Orogeny i
Williams, I.S.	2	*11117		1988	Age of the Barramundi Orogeny i

Authors Seq

Author	Seq	Year	Entered	By	Ref.Id
Page, R.W.	1	1988	01-AUG-99	ROCKCHEM	*11117
Williams, I.S.	2				

Reference Details

Title
Age of the Barramundi Orogeny in northern Australia by means of ion microprobe and conventional U-Pb zircon studies

Source
Precambrian Research

Vol/Part 40/41 Pages 21-36

You MUST query the database before adding a new reference. To add a new reference move to the Ref Detail block and then press Insert Record.

Pick list available. Enter a search clue (e.g. 'Gerono') then press LIST.
Count: *2 <List><Replace>

Figure 15. The AGSOREFS Single-Author Query form displaying the reference corresponding to the OZCHRON Reference ID in Figure 14.

In the OZROX database the same techniques now apply to the 'Biblio. Ref' field of the Sites form. The 'ROCKREFS' table has been eliminated from OZROX and its place is now taken by 'REF' type records in the LITHDATA table. For attaching references to rock samples the Rocks form now caters for bibliographic references as shown in Fig. 16. To attach a reference to a rock sample (or lithology), the Attribute 'REF' and the Descriptor 'AR' are entered into the Lithdata block of the Rocks form - with an AGSOREFS Ref. ID in the Description column. A validation trigger prevents the entry of Ref. IDs not already in AGSOREFS. To view the corresponding reference, just press the **LIST** function key with the cursor in the description field. The reference is displayed in the AGSOREFS Single-Author Query form (see Figure 6). Press **EXIT** to return to the Rocks form. Multiple references may be attached by inserting several 'REF' records in the Lithdata block. If you press **LIST** without a Ref. ID in the description field the empty Single-Author Query form is displayed. Use it to query AGSOREFS before attaching a reference to a sample.

The same methods now apply to the Petrography form in the PETROG database, the only difference being that 'REF' records are placed in the third block of that form - as shown in Figure 17.

