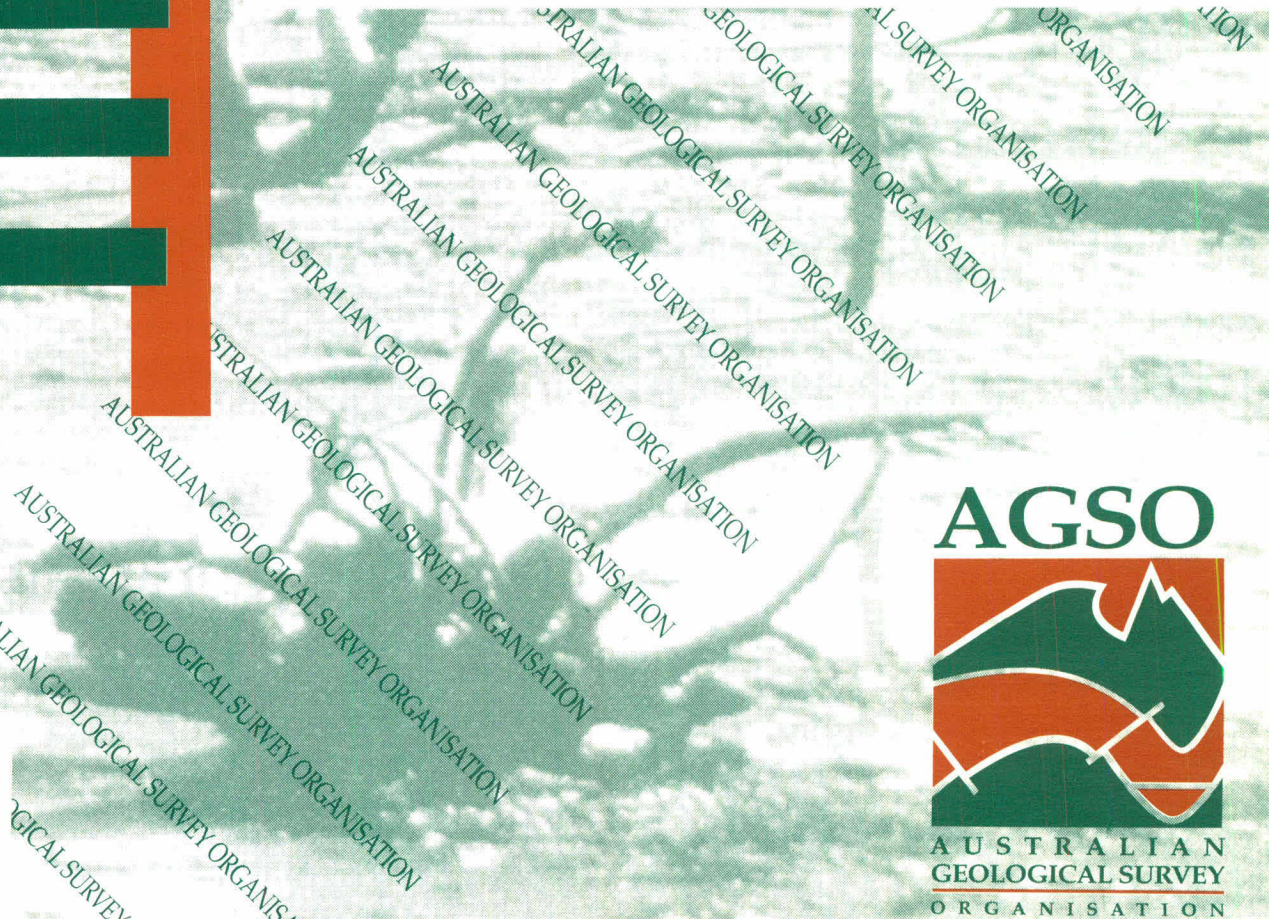
AGSO

GUIDE TO THE AGSO CATALOG

by

R.J. Ryburn, S.I. Ross,
B.S. Wijatkowska-Asfaw

Record 2000/13



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AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

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ABSTRACT

The 'AGSO Catalog' is a directory or metadatabase* of AGSO's outputs that includes products, publications, datasets and resources. Built using AGSO's corporate Oracle database management system, the Catalog evolved from an earlier 'Products Database' that provided a web query and ordering system for all products sold by AGSO's Sales Centre. This function continues, with web interfaces to all products in the Catalog. However, the Catalog also covers external articles, papers and other publications by AGSO staff, datasets that may be either sold or given away, and corporate resources, such as maps, images and GIS datasets, many of which were purchased from outside the organisation. AGSO's web site now includes a Catalog interface for articles and other publications by AGSO staff.

The Catalog is designed to capture metadata* at the source — the author, project manager, research group leader or AGSO Division. Any staff member with an Oracle logon can initiate a new entry in the Catalog via Oracle data entry forms on AGSO's intranet. The Catalog also facilitates business processes associated with the production of datasets, publications, etc. Various checks and 'sign-offs' have been included for quality assurance and to prevent unchecked metadata from appearing on AGSO's external web site. More business rules will be added as the need arises.

The Catalog encompasses the types of multimedia metadata expected of a web-based directory for a medium-to-large organisation like AGSO. It includes structures for thumbnail images, attached documents, associated computer files, and complex spatial metadata, such as points, lines and irregular polygons. However, the full implementation of multimedia capabilities must await the installation of Oracle 8i. The Catalog is well positioned to form the nucleus of future systems of online, client-driven information distribution. It is AGSO's first truly 'enterprise' application, readily accessible by all staff throughout the organisation.

This guide presents an overview of the Catalog, and describes in detail the menus, screen forms and reports used to input and view the data. In particular, the definitions of most fields in the database are given in some depth under descriptions of the screen forms - providing, in effect, a data dictionary of the database. The database schema, with the definitions of all tables, views, indices, constraints and triggers is listed in Appendix A.

* Metadata is data about data. A good example of a metadatabase is a library catalog.

1 - INTRODUCTION

The need for a publicly visible computer directory of AGSO's outputs was foreseen when AGSO's web site was first established in 1994. The initial catalogue was just a static list of products extracted from the 'BookScan' point-of-sale system used by the AGSO Sales Centre. This required constant updating, but the job was labour intensive and just did not get done. The BookScan system ran on a PC and was difficult to link directly to AGSO's Unix-based web site, so a separate Oracle database — the 'Products Database' — was established in 1997 for online web access. This was updated each month from a file extracted from the BookScan system. At the same time an attempt was made to automatically extract extra metadata, based on searches for specific character groups in the supplied fields — eg, map subtypes were set to 'gravity' wherever 'gravi' or 'gravo' were found in the title.

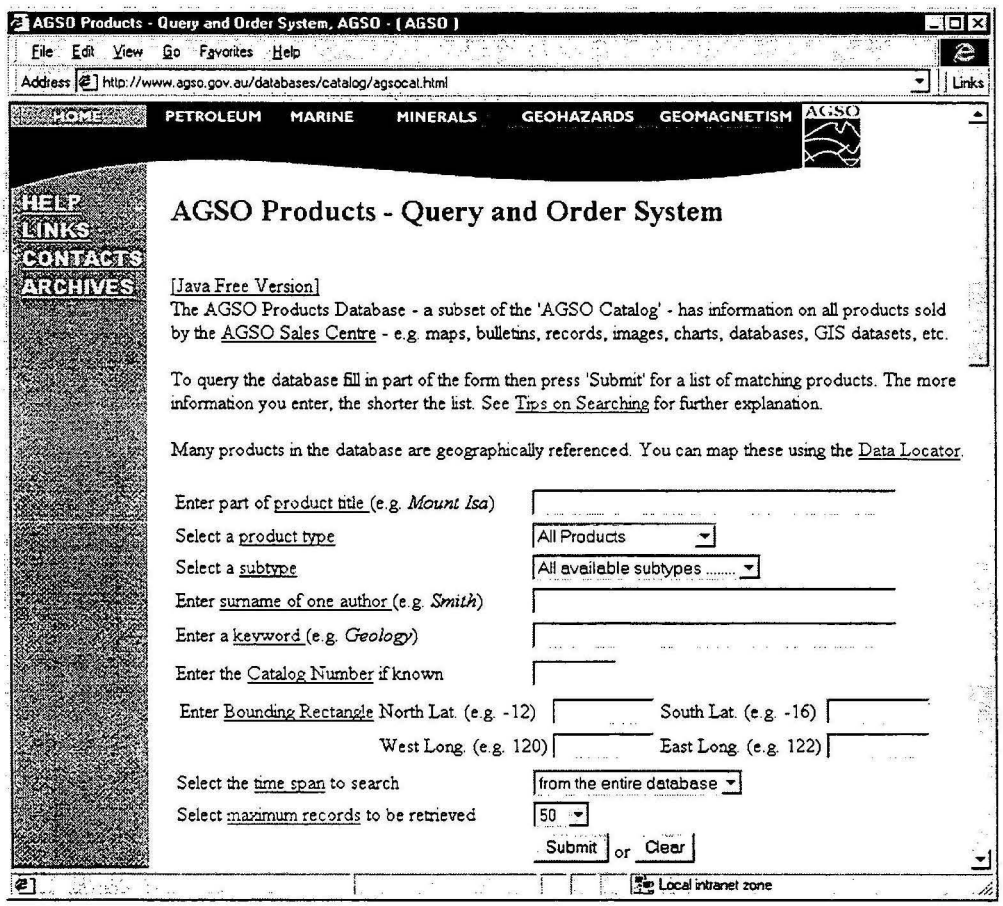

Figure 1. The current web query form for the product component of the AGSO Catalog.

The Products Database suffered from several problems. Any changes made to records in the BookScan system after the records were exported to the Products Database were not reflected in the Products Database. The metadata gathered by BookScan, a system designed primarily for retail bookshops, were inadequate for the sort of fully featured, spatially enabled, web-based directory that AGSO required. For example, only the names of senior authors of publications were entered, and there were no checks on the quality of the metadata. Spatial

metadata were not provided, except where bounding latitudes and longitudes could be inferred from 1:100 000 and 1:250 000 map IDs embedded in the supplied BookScan IDs.

To address these problems, the Products Database was completely re-thought to become what is now known as 'The AGSO Catalog' (Ryburn, 1999a). Unlike the earlier Products Database, the Catalog is designed to capture its metadata at the source — the author, project manager, research group leader or AGSO Division. In addition to Sales Centre products, metadata categories include external publications, datasets and corporate resources. The Catalog is intended to cater for the types of multimedia metadata expected of a web-based directory for a diverse, information-rich organisation (Ryburn, 1999b). The Catalog is AGSO's first truly 'enterprise' application, as any AGSO staff member with an Oracle logon can enter a new record into the Catalog via Oracle forms on the corporate intranet. At the same time, checks and 'sign-offs' prevent unchecked metadata from appearing on AGSO's external web site. The Catalog is well positioned to form the nucleus of AGSO's future systems of online, client-driven information distribution (Root & Ryburn, 1999).

The Catalog classifies all entries into four main categories that are not mutually exclusive — products, publications, datasets and resources — each marked by a 'flag' in the Catalog.

Products and the AGSO Sales Centre

A major function of the Catalog is to inform the public via AGSO's web site of the products available from AGSO's Sales Centre, and their prices, and to enable customers to find and order products online (Fig. 1). Products should be well-characterised, reproducible objects — not one-off outputs made for a particular client. Examples of the latter include partial database extracts and subsets of larger airborne geophysical datasets. These are really transactions, not objects that should be included in the Catalog. The definition of a product adopted by the Catalog is any *pre-defined* reproducible AGSO output that is issued by the AGSO Sales Centre. The Catalog has a 'Products Flag' that must be set to 'Y' for all such entries. Not all products have a price (some are free), but all pass through the Sales Centre.

The Catalog is designed so that the originating author, or project manager, can enter the metadata. After all, they are the ones with the most accurate information about the product. The Sales Centre then only needs to check the quality of the supplied metadata, add the price and GST, and provide the final sign-off for the product to become visible on the web. If the metadata are inadequate the product will not be released. However, this system of quality control is in a 'period of grace', and some metadata are still being fixed after the event. The Sales Centre is soon to upgrade from BookScan to a new Oracle Financials point-of-sale system (see below). Metadata will then be rigorously monitored, and if necessary, returned to the initiator for fixing before being signed off and released.

Publications by AGSO Staff

The second major class of objects in the Catalog is publications. The Catalog is able to record and display metadata on the published output of AGSO staff members, including all papers, articles and monographs published externally (Fig. 2). AGSO's internal publications are normally classed as products, but external publications were not previously captured in any single bibliographic database. In the process of signing publication approval forms, AGSO Chiefs of Division have a role to play in ensuring that metadata on all scientific papers, at least, are captured in the Catalog — including those published in *AGSO Research Newsletter*. However the field of capture could be extended to publicity articles in outside

publications – even articles in AusGeo News. By tying the traditional, paper-based, permission-to-publish forms to the Catalog, we hope to ensure that all appropriate metadata is entered before the permission to publish can be obtained.

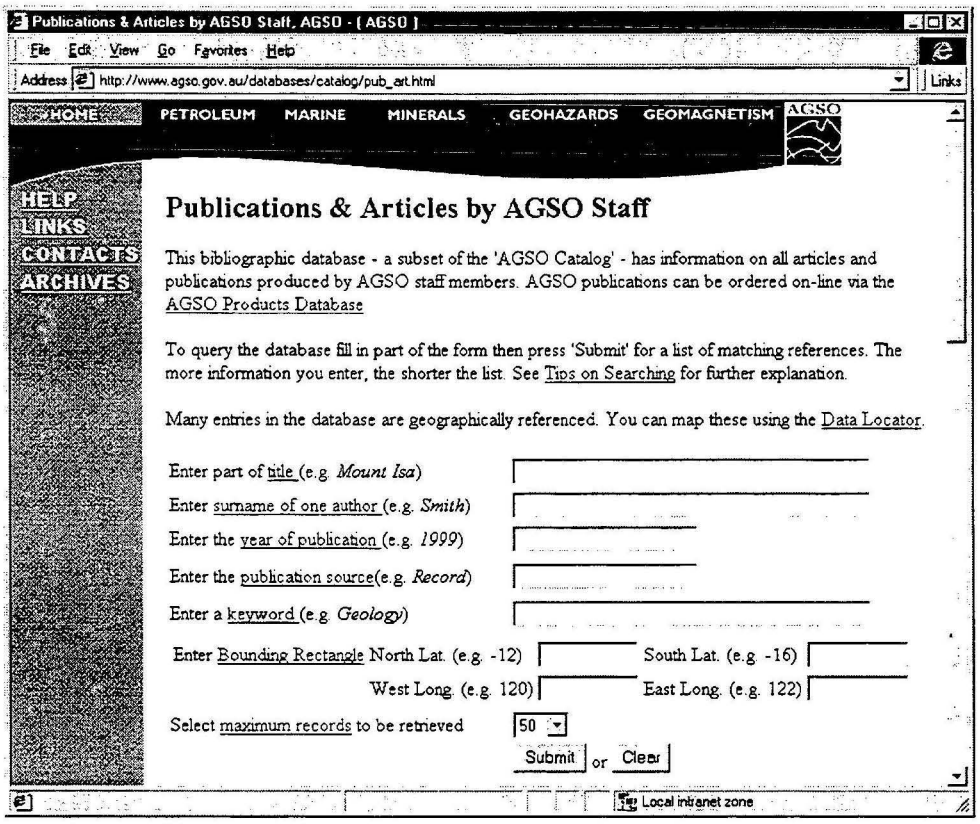

Figure 2. The current web query form for the publication component of the AGSO Catalog.

AGSO's Datasets

In addition to products and publications, the third main category of metadata in the Catalog pertains to AGSO-produced datasets, such as maps, GIS coverages, images, database extracts, spreadsheets etc. In fact, many datasets are products as well as datasets, and lithoprinted maps are generally classed as products, publications and datasets. However, some AGSO datasets are sold or distributed without the involvement of the Sales Centre — eg, marine datasets sold via the NOPEC agency. Such outputs are currently classified as pure datasets.

Corporate Resources

The last main category of metadata in the Catalog falls under the appellation of 'shared corporate resources'. This includes items like topographic maps, satellite images, GIS datasets and software packages that have been obtained from outside AGSO and may be useful to others. It also covers shared objects or reference material that has originated in AGSO, that may also be classed as products, datasets or publications. Examples include sedimentary basin boundaries, posters and illustrations. This category of metadata has yet to attract many entries, but it could become much more widely used in the future.

The Relationship of the Catalog to the GeoMet Spatial Metadatabase

'GeoMet', AGSO's Spatial Metadatabase (Ryburn & Ross, in prep.), was built prior to the Catalog in response to requirements for a metadatabase of spatial datasets, such as maps, images and GIS datasets, that complied with the metadata guidelines (ANZLIC, 1996) established by the Australia New Zealand Land Information Council. Except for the addition of authors, and the lengthening of some fields, GeoMet conforms closely to the ANZLIC guidelines. GeoMet was built as an Oracle database, with data entry via the intranet and a publicly visible web query facility (*http://www.agso.gov.au/databases/geomet/geomet.html*). It was initially populated with metadata on about 800 AGSO geological maps at 1:100 000 and 1:250 000 scales, which were extracted from the earlier Products Database. It has since been updated, with GIS metadata in particular (Fig. 3), and is actively being expanded.

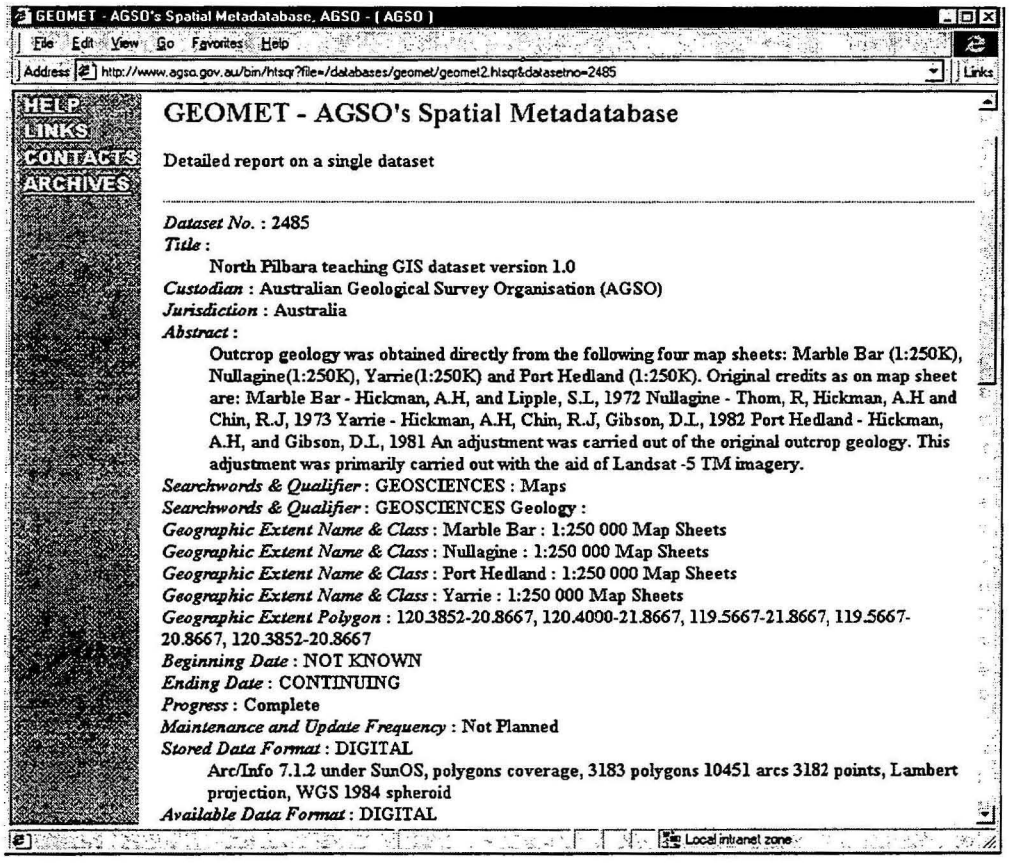

Figure 3. Part of report on a GeoMet dataset from AGSO's web site.

The metadata in GeoMet are of the specialised type required for spatial products like GIS datasets, maps and images, and are unsuited to AGSO Catalog, which is a minimalist general directory containing many non-spatial objects. GeoMet has long fields for describing lineage, positional accuracy, attribute accuracy, logical consistency and completeness, and specialist knowledge is generally required to enter such metadata. Because nearly all objects in GeoMet should also occur in the Catalog, software procedures have been developed to facilitate metadata transfer from an existing Catalog record to appropriate fields in GeoMet. Additional information is nearly always required to complete the dataset entry in GeoMet.

Business Processes

The Catalog is not just a database of AGSO's outputs, it also facilitates the business processes used to generate those outputs. To this end a number of checks and sign-off fields have been included, not all of which are actively used as yet. The most important of these are to do with the Sales Centre, which controls the release of products to the public. For a product to be visible on the web, not only must the 'web visible' and 'product' flags be set to 'Y', but the release date and Oracle user name of a 'data administrator' must also exist in the 'Release Date' and 'Sales Centre OK' fields of the Catalog. There are similar fields for the quality control of datasets, which are currently signed off for all GIS datasets by the GIS Data Group in Information Management Branch.

External publications do not pass through the Sales Centre, but an entry must still be made in the Catalog so that a publication approval form can be printed. Division Chiefs should not approve publications that have not yet been entered in the Catalog. Because the senior author is usually the first to know when a paper or article or monograph has been published, we allow the initiator of the metadata to set the web flag to Y', but not at the same time the metadata are entered. The initiator must wait a week from entering the metadata before the web flag can be changed to 'Y'. This helps prevent authors from anticipating the publication of an article that may actually be delayed for some reason. We plan to set up an automated process to cull entries from the Catalog for articles that are not published and products that are not released — that is, after a suitable period has elapsed.

Except for GIS datasets passing through the formal QC process, the sign-off fields provided for metadata quality and divisional use are not yet fully used. In particular, the metadata sign-off will become mandatory when metadata custodianship is more formally organised in AGSO. The metadata custodian's job is to ensure that the metadata supplied is of adequate quality and is not duplicated. With web access to information on a rapid rise, the need to monitor the quality of metadata in the Catalog becomes increasingly important. Automated information delivery systems cannot be made to work properly with poor metadata. Without good metadata, entries are easily lost or overlooked amongst thousands of others.

Other business processes concern the reports that generate the traditional paper permission forms for both publications and datasets. After entering the metadata for a publication, article or paper, the author clicks on a button to print out the publication approval form ('AGSO Internal/External Publication Approval'). This form displays some of the metadata just entered, as well as the traditional boxes for peer review sign-offs, security classification, Division Chief sign-off, etc. A similar form exists for datasets. These forms should ensure that project leaders and Division Chiefs are aware that the essential metadata have been inserted into the Catalog, before they sign. They should not sign forms that have no Catalog Number — proof that the metadata have been entered.

Ideally, paper forms of this sort should no longer be needed, and the next step would be the automatic generation of e-mail messages. However, that is still some way off yet, as the procedures are quite involved. Totally automated systems are still time-consuming and expensive to implement. The volume of products currently passing through the Sales Centre would probably not justify the cost of setting up a completely automated, homegrown system.

Point-of-Sale System

When the Catalog was first designed, the BookScan point-of-sale system used by the Sales Centre was to have been replaced by tightly integrated, inhouse, Oracle applications to keep track of invoicing, sales, inventory, customers etc. The data structures for these systems were already in place. However, a decision was made elsewhere in AGSO to outsource the entire financial system, including the Sales Centre's sales, inventory and customer relations systems. These outsourced and remotely located systems use the 'Oracle Financials' application suite.

This curtailed plans for tight integration of the Catalog with the sales system, and left us with a split system and a certain amount of double data entry. The existence of two firewalls between the two systems ruled out the possibility of automated linkages, or at least made such solutions expensive and fragile. To some extent these problems have been overcome by separating the Catalog as much as possible from the sales system. However, the Catalog must still be the master for all pricing information, as this is what the customer sees via the AGSO web site. Also, the Catalog number, title and other metadata must now be manually transferred from the Catalog to the sales system for each new product.

A financial project code field (as distinct from the scientific project number) has been added to the Catalog to help pass this item of information from the project or author to the Sales Centre. This code is required to determine the financial project to which revenue from sales of the product will be directed. The codes change when projects finish, and also for other reasons, so the Catalog eventually goes out of date in this regard. We plan to set up a procedure to delete financial codes from the Catalog at the end of each financial year, as this financially-related information belongs in the financial system rather than the Catalog.

A custom-designed 'front end' for use by the Sales Centre could perhaps overcome most of the problems mentioned above, but this is beyond the reach of current budgets. A more rigorous and up-to-date solution would involve an XML-based internet messaging system to synchronise both databases, but this would probably be even more expensive to achieve. Although government policy is to outsource routine computing tasks, and in general this is probably the correct decision, it does lead to some data integration problems. The Catalog itself is too specialised to be replaced by an outsourced commercial solution, at least in the immediate future. AGSO deals in an enormously diverse range of products and data, and no ready-made software solutions appear to be available, as yet.

There is also the question, currently being resolved, of how future e-commerce solutions will integrate with the Catalog and financial systems. We anticipate that the information on web transactions will be passed directly to the finance system, and that all product information will be drawn from the Catalog. This, plus the current trend in Commonwealth Government away from cost-recovery towards free client-driven access to information via the web, should see the role of the Sales Centre diminish in the future.

2 — HARDWARE AND SOFTWARE ENVIRONMENT

Database Server

The Catalog resides on AGSO's corporate database server, 'Mica'. This is currently a 4-CPU Sun Ultra Enterprise server, with 108 Gigabytes of RAID 5 disc storage, running the Solaris 2.6 operating system (Unix) and the Oracle (version 7.3.4, soon to be upgraded to 8.1.6) relational database management system (RDBMS). Oracle Application Server (version 4.08), which supplies all Oracle menus, forms and reports to the intranet, now runs on 'Marl', the intranet server. Menus, forms and reports are currently built using Oracle Developer version 6. Staff members communicate with the Catalog over AGSO's internal TCP/IP network from their PCs or Unix workstations.

Catalog 'Front Ends'

In implementing database menus, forms and reports, we have deliberately adopted a 'belt-and-braces' policy. The tried-and-true X-Windows (Motif) environment was the first 'thin-client' solution to be implemented, and this is still the more robust method of accessing the Catalog within AGSO. Those with PCs normally use Hummingbird's Exceed software to emulate a Unix X-Terminal. Printing reports is not very convenient in this environment, as the user is often unsure on what printer the reports will appear. However, users can now elect to output comprehensive reports to a file, then download the file to a PC for printing.

The second method, which holds great promise but is still a little immature, uses Oracle Application Server to deliver Oracle menus, forms and reports as Java applications on the AGSO intranet. The forms are similar to the X-Windows forms, but slightly larger. The user only needs a web browser on a PC or workstation to view them. This '3-tier architecture' method is expected to take over completely when more mature versions of the software are installed and network performance is enhanced. Either method is a big advance on the earlier 'fat-client' approach, in which all application software was installed on every user's PC.

Web Interfaces

The database interfaces on AGSO's external web site communicate directly with the database server via Oracle's SQL*Net middleware, but with strong encryption employed through the corporate firewall. HTML query forms are used on the web, with sections of embedded Java Script also beginning to be used. Catalog reports, which are triggered by the submission of criteria from the HTML query forms, are generated from the corporate databases via Scribe Technology's SQR database reporting language — used here as a dynamic HTML generator.

There are currently three web interfaces to the Catalog — the AGSO products query and order system (Fig. 1), a query interface for publications and articles by AGSO staff (Fig. 2), and the 'Data Locator' map interface to all AGSO's products with bounding latitudes and longitudes (Fig. 16). The first two interfaces were developed using HTML query forms and the SQR reporting language. The query form for products has some Java Script in it for generating a list of Catalog subtypes that match the selected Catalog type. The 'Data Locator' is a C program that plots bounding rectangles on 'zoomable' GIF maps from a flat file that is automatically updated each month from the Catalog database by a SQL script. By clicking on a rectangle, some of the attribute data from the Catalog are displayed.

3 — STRUCTURE OF THE CATALOG

Basic Structure

As illustrated in Fig. 4, the AGSO Catalog is a fairly simple database consisting of a main AGSOCAT data table surrounded by a few other data tables that have many-to-one relationships with the main table. For example, the CATAUTHORS table allows multiple authors to be attached to one row in the AGSOCAT table, as does CATTHEMES for keywords or themes. The rounded boxes in Fig. 4 indicate the authority tables, which are mainly used to classify and validate entries in the data tables. The CATTYPES and CATSUBS tables, for instance, control the terms used in the Catalog's two-fold classification scheme — 'AGSO Publication' and 'Record', for example. The SCIENTIFIC_PROJECTS table is intended to be a complete list of AGSO's scientific projects, past and present. An approved subset of this table is visible on AGSO's web site. All authority tables have a one-to-many relationship with the data tables to which they are linked. The link to the GeoMet metadatabase consists of a Catalog number in the main GeoMet table. For full definitions of the structure of the AGSO Catalog, refer to the schema listed in Appendix A.

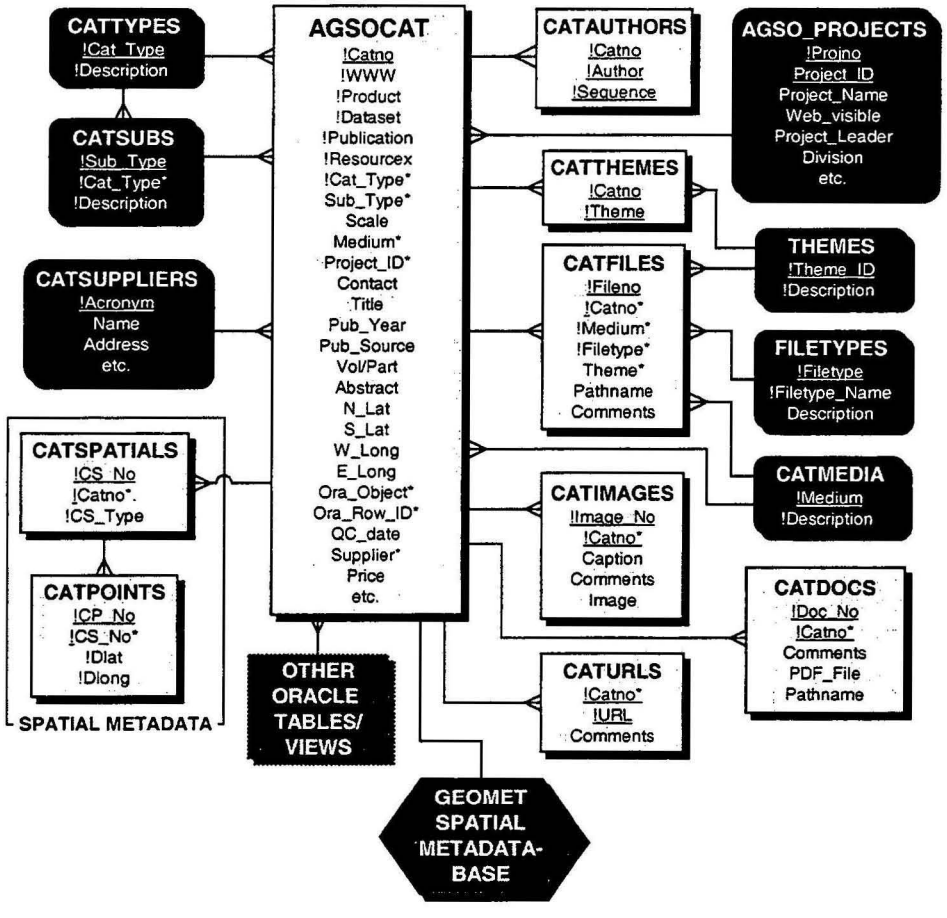

Figure 4. A table-relationship diagram of the AGSO Catalog, showing relationships between tables. The 'crows' feet' signify the many end of many-to-one linkages. The rounded boxes represent tables used to validate the data in the Catalog. The GeoMet Spatial Metadatabase is marked by the hexagon.

Web-Related Tables

Several of the subsidiary data tables in the Catalog are primarily for web purposes. For example, the CATURLS table permits multiple web URL addresses to be attached to any Catalog object and displayed on the web underlined and in blue. Similarly the CATIMAGES and CATDOCS tables are intended to supply 'thumbnail' images and documents for web display alongside Catalog information. In this case we are waiting for Oracle version 8i before storing images and documents in these database tables.

The CATFILES table, however, already contains pathnames of many files and directories associated with Catalog records, particularly the pathnames of directories on the corporate disc store containing GIS datasets. This table will come into its own when we automate further for e-commerce and client-driven distribution of datasets and electronic products via the Internet. Under Oracle 8i the pathnames will probably be replaced with object references, thus freeing us from the well-known problems associated with hierarchical Unix pathnames.

Spatial Metadata

The Catalog includes two types of spatial metadata. The AGSOCAT table includes fields for a standard bounding rectangle in latitude and longitude. These permit rectangles to be drawn on a map of Australia on the Catalog web interfaces. The database also has two tables, CATSPATIALS and CATPOINTS, for more precise spatial metadata, where that is required.

These tables allow any number of geographically located points, irregular lines and complex polygons to be attached to a Catalog entry. For example, many seismic lines, or many polygons representing airborne survey areas, can be linked to one Catalog record. The CATSPATIALS table describes the type of spatial object — points, line or polygon — and the CATPOINTS table contains the points that go to make up a set of points, the node points along a line, or the node points that go to make up a polygon. The code needed to place such spatial metadata on the web has not yet been written, but this should not be too difficult.

Authority Tables

The authority tables, also known as validation or look-up tables, contain the classifications or validation lists of all the terms that can be used in controlled fields of data tables. The FILETYPES table, for example, contains a non-redundant list of all the computer file types that are used in the CATFILES table. In general, referential integrity constraints are enforced between the controlled fields in data tables and the authority tables to which they refer. Thus the user cannot enter a file type into the CATFILES table that is not already in the FILETYPES authority table. If users attempt to do so, they receive a polite message to the effect that an attempt has been made to violate the particular integrity constraint.

Most users do not have the Oracle privileges to be able to alter the data in authority tables. They must consult a user with 'Catalog Administration' privileges (eg. Barbara Wijatkowska-Asfaw, IMB) to do so. This prevents hasty additions to authority tables that may overlap with existing terms, or are otherwise inappropriate. It is important to safeguard the integrity of authority tables so that redundant or mismatching terms do not appear in the list. That is why we like to have formal custodians to look after the contents of authority tables, and thereby the integrity and usefulness of the database as a whole. Without good authority tables, the usefulness of databases and the retrievability of data are greatly diminished.

Links to Other Oracle Tables/Views

Provision has been made in the Catalog for linkages to other Oracle tables or views. The AGSOCAT table includes a field called 'ora_object' for the name of the table or view, and a field called 'ora_row_id' for a foreign key pointing to the primary key ID of a row in that table or view. The purpose of this linking mechanism is to allow additional metadata to be linked to the Catalog. For example, the Remos database of remotely sensed and processed images contains much information about the images it covers, but most of this information is too specialised to be included in the Catalog. By placing the required links in the Catalog, a generic mechanism can be set up to allow additional, second-order metadata in other Oracle tables to be displayed on the web. Such a mechanism can easily be set up, if and when it is required, but it has not yet been implemented.

Catalog Tables and Views

The Oracle tables and views that make up the AGSO Catalog, together with brief descriptions, are summarised in the following table.

NAME	TYPE	CONTENTS
AGSOCAT	Data Table	Main metadata table – all attributes having a one-to-one relationship with Catalog objects
CATAUTHORS	Data Table	Authors of Catalog items & their order
CATTHEMES	Data Table	Theme words attached to Catalog entries
CATFILES	Data Table	Computer files linked to Catalog entries
CATIMAGES	Data Table	Images of various types linked to Catalog entries
CATDOCS	Data Table	PDF documents linked to Catalog entries
CATURLS	Data Table	Web URLs linked to Catalog entries
CATSPATIALS	Data Table	Points, lines and polygons linked to Catalog
CATPOINTS	Data Table	Coordinates of all points, lines and polygons
CATTYPES	Authority Table	First-order classification of Catalog objects
CATSUBS	Authority Table	Second-order classification of Catalog types
CATSUPPLIERS	Authority Table	Organisations that supplied Catalog objects
SCIENTIFIC_PROJECTS	Authority Table	Table of all scientific projects, past & present
FINANCIAL_PROJECTS	Authority Table	Table of financial project/subproject codes
THEMES	Authority Table	Lookup table of theme words and phrases
FILETYPES	Authority Table	Lookup table of computer file types
CATMEDIA	Authority Table	Lookup table of Catalog object media
CATENTRY	View	Entry view of AGSOCAT for general users
CURRENT_PROJECTS	View	Current view of SCIENTIFIC_PROJECTS
WEB_AGSOCAT	View	Web view of the AGSOCAT table
WEB_CAT_PRODS	View	Web view of all products in AGSOCAT
WEB_CAT_PUBS	View	Web view of all publications in AGSOCAT
WEB_PUB_SOURCE	View	All distinct publication sources in AGSOCAT
WEB_CATAUTHORS	View	Distinct authors from the CATAUTHORS table
WEB_PROJECTS	View	Approved projects in SCIENTIFIC_PROJECTS
WEB_CATSUBS	View	Web view of all subtypes *versus* Catalog types

4 - SECURITY AND ACCESS

Public web Access

The bits of the AGSO Catalog that can be seen by external clients on AGSO's web site are determined by several read-only views. The web_CAT_PRODS view, for example, provides an appropriate selection of columns from the AGSOCAT table — but only for rows where the 'www' and 'products' flags are both set to 'Y'.

```
create view web_cat_prods as
      select catno, cat_type, etc …
      from agsocat
      where www     = 'Y'
      and   product = 'Y';
```

Note that the 'www' flag is automatically set to 'N' in all newly created Catalog rows. For products, this flag is set to 'Y' by AGSO's Sales Centre when the product is released. For external publications, the person who entered the record may update the flag to 'Y', but a database trigger ensures that this can only be done one or more weeks after the record is created. The author is usually the best person to know when an external paper or article has been published, and we trust them to set the 'www' flag to 'Y' only after publication. The web_CAT_PUBS view of all publications in the database is defined as follows:

```
create view web_cat_pubs as
      select catno, cat_type, etc …
      from agsocat
      where www         = 'Y'
      and   publication = 'Y';
```

All other tables in the AGSO Catalog have full external select access, but in general, web clients will only get to see the rows that are linked directly to web-visible AGSOCAT rows, unless those tables are explicitly visible from a lookup table interface, or pulldown list. Some views have been created specifically to provide the web interface with non-redundant lists of objects — such as authors via the web_CATAUTHORS view. From the SCIENTIFIC_PROJECTS table, any current or former scientific project is visible in the Catalog, but the interface to 'Current AGSO Projects' provided in the 'About AGSO' section of AGSO's web site uses the CURRENT_PROJECTS view of SCIENTIFIC_PROJECTS.

Select, Insert, Update and Delete Access by AGSO Staff in General

Any AGSO staff member with an Oracle username and password can enter a new row into the Catalog. They can also make changes to the data in many of the columns in the rows that they themselves have previously entered, and which have not yet been signed off for metadata quality. To do this they use the CATENTRY view of AGSOCAT table, which is defined as follows:

```
create view catentry as
      select catno, www, product, etc …
      from   agsocat
      where  enteredby = user
      and    released is null
      and    metadata_OK  is null;
```

The Initiator's Form (Section 6) corresponds to this CATENTRY view. It allows all internal Oracle users to create new Catalog objects. With this form, users can see only the objects that they themselves have created, that have not yet been signed off for release as a product or for metadata quality. The 'sign-offs' and other quality control fields required before an object is made visible to the public can be seen in the Administrator's Form (Fig. 9). Users can view all the columns and rows in the Catalog using the Administrator's Form, but they do not have insert, update or delete privileges in this form.

For the other data tables in the Catalog ordinary users have select, insert, update and delete privileges. We think it better to trust AGSO users rather than complicate the database with irksome access restrictions, but this situation can be quickly changed if any abuse is detected. This arrangement allows internal Oracle users to make corrections to authorship, for example, or to the theme words, images and files attached to any Catalog object. For lookup tables such as SCIENTIFIC_PROJECTS, though, they have select privileges only.

Access by Data Administrators and Sales Centre Staff

Data administrators, who are typically metadata custodians at the corporate or divisional level, are given the role '***agsocat_data_admin***'. In SQL*Plus this gives them complete select, insert, update and delete privileges on the data tables in the Catalog, but not the lookup tables. For products in forms, however, they are prevented from altering prices, sales taxes, www flags, and the data in product release fields. Sales Centre staff, in addition to being data administrators, are granted the role '***agsocat_salescentre***'. This gives them the ability in forms to sign off Catalog records, set the price and sales tax, and change the 'www' flag to 'Y'. We expect data administrators who are not Sales centre staff to stay away in SQL*Plus from the fields that only concern the Sales Centre.

Catalog Administrator's Privileges

The '***agsocat_admin***' role gives select, insert, update and delete privileges on lookup tables, as well as all data tables. At present, Dave Harris (Sales Centre Manager), Barbara Wijatkowska-Asfaw (Information Management Branch, IMB), and Rod Ryburn (IMB) have this role. You must see one of these people to add to Catalog types, subtypes, etc.

Owner's Privileges

The owner of the AGSO Catalog is the Oracle user '***products***'. Products has complete privileges in the Oracle test environment, but must go through change control procedures in the Oracle Production environment in order to make any changes to the structure of the database. Products has full data privileges.

5 - LOGGING IN VIA THE INTRANET

The main interface for entry and administration of Catalog metadata is accessed from the 'Staff Intranet' on AGSO's web site. To get to the intranet from AGSO's home page (*http://www.agso.gov.au*) select 'STAFF ONLY' from the 'Quick Find' menu near the bottom of the home page. The screen shown in Fig. 5 should appear (or one like it).

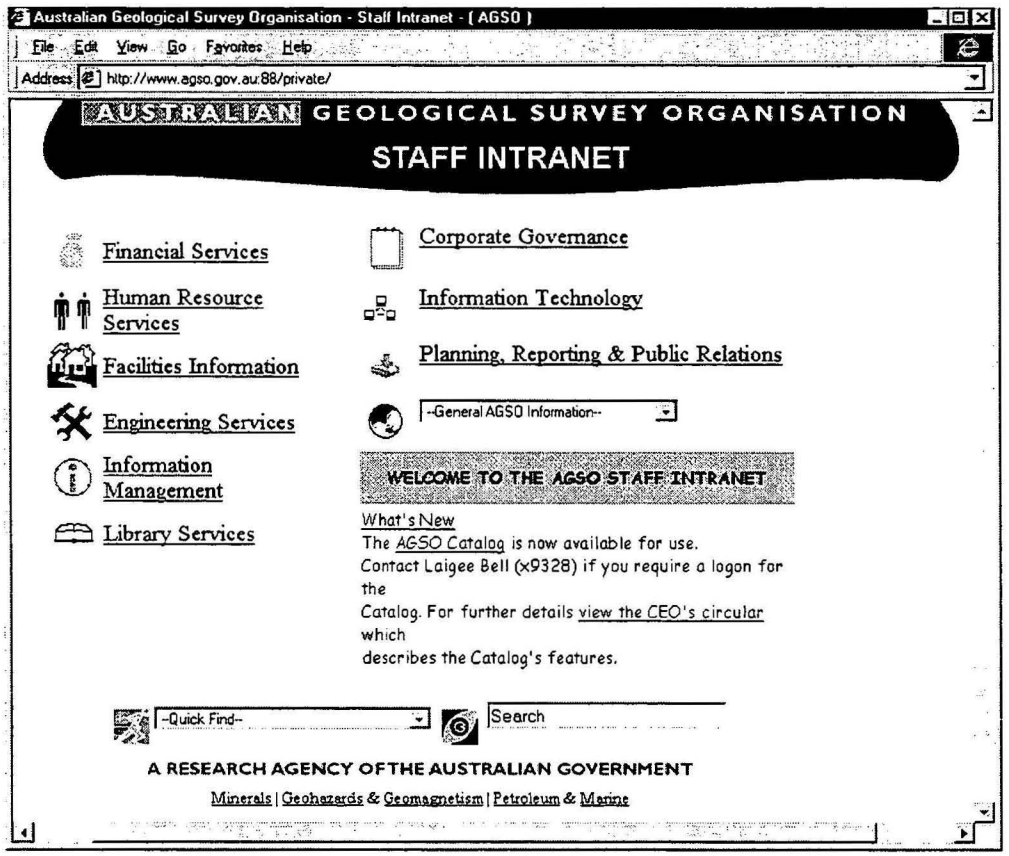

Figure 5. The initial 'Staff Intranet' page currently displayed on AGSO's web site.

To log into Oracle and the Catalog, click on Information Management and then on AGSO Catalog Menu. At present, to run Oracle forms on your Netscape or Microsoft browser, a 'plug-in' software module called Oracle 'JInitiator' must load itself into your browser, although this may not be needed with future versions of Microsoft Explorer. The first time this happens, the module must be downloaded to your hard disc. If you encounter any problems following the instructions for downloading J-Initiator, contact AGSO's database administrator for assistance. Once loaded on your hard disk, JInitiator currently takes about 30 seconds to load the necessary Java classes into your browser each time Oracle is used thereafter. You will then be invited to log into Oracle with your personal logon.

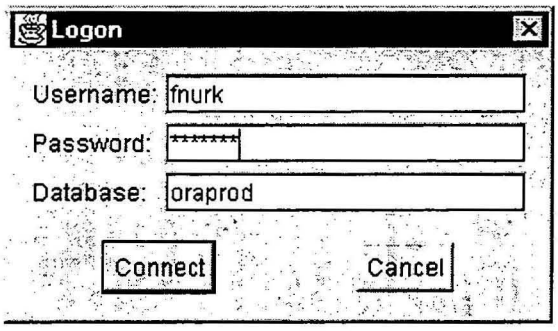

Figure 6. The Java dialog box for logging on to Oracle.

Enter your Oracle username, password, and *'oraprod'* for 'Database'. This logs you into the Oracle Production environment, and the AGSO Catalog Menu is now displayed (Fig. 7).

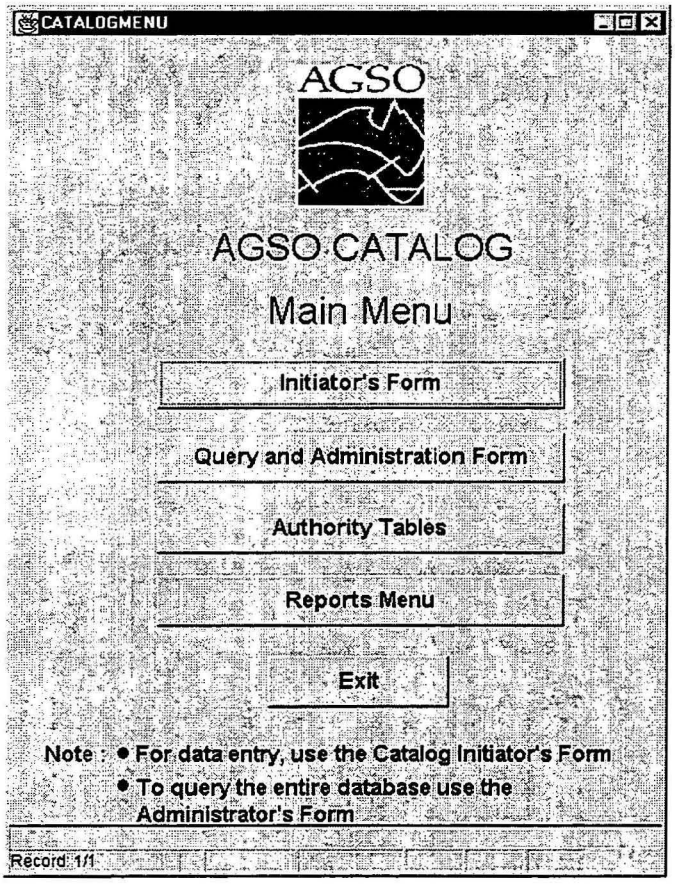

Figure 7. The AGSO Catalog Main Menu. Click on the appropriate button to enter the Initiator's Form, Administrator's Form, etc.

To enter a new Catalog record click on the 'Initiator's Form' button.

6 - THE CATALOG INITIATOR'S FORM

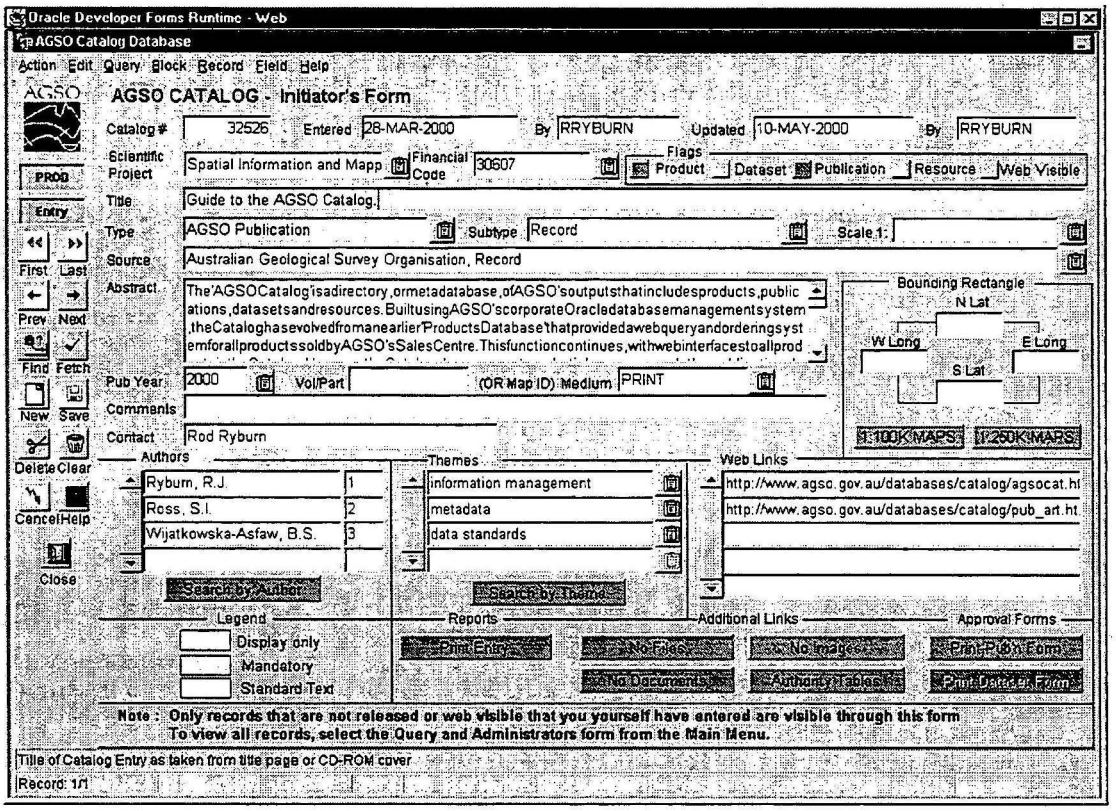

Figure 8. The AGSO Catalog Initiator's Form.

The Initiator's Form (Fig. 8) is designed for AGSO staff to initiate metadata entries in the AGSO Catalog and to print out the AGSO approval forms for new publications and datasets. With this form users can only see the entries that they themselves have made (ie, the columns covered by the CATENTRY view of the AGSOCAT table) that have not yet been signed off or made web visible. Users are free to make changes to all visible entries. The Catalog Query & Administration Form (Fig. 9) can be used to view *all* entries in the Catalog, including those not yet signed off or made web visible. However, users cannot use that form to make new entries, or change existing ones, unless they have been granted the '*agsocat_data_admin*' role.

Although authors, project leaders or managers will enter most new metadata, any AGSO staff member with an Oracle logon can start a new Catalog entry. Depending on the type of entry, several steps must be negotiated before the public can see a Catalog entry. The only circumstance where the web flag that enables the metadata to be seen on AGSO's web site can be set to 'Y' by the initiator is that of an external publication — and then only after a week has elapsed since the metadata was first entered. In this case, it is the author who knows first when a paper or article has appeared in print, and we trust the author not to make the metadata visible on the web before the paper has been published. This could be changed to include a divisional sign-off step, but only if it proves necessary.

The Initiator's form executes an automatic query when invoked, so all unprocessed records you have previously entered are visible. Click the 'Next' button to step through them, or the 'Last' button to see the last record you have previously entered. To enter a new record you must first click on the 'New' button. You may then enter your metadata into the appropriate fields in the form and save them with the 'Save' button. To be able to save your entry, at least one flag must be set to blue ('Y') to classify the entry as a product, dataset, publication or resource. If your entry is classed as a product, it must also have a financial project code before it can be saved. For publications or datasets, press the appropriate button at the bottom of the form to obtain the corresponding permission form (see Appendix B & C).

This form is based primarily on the CATENTRY view of the AGSOCAT table, but includes fields from the CATAUTHORS, CATTHEMES and CATURLS tables, as indicated below. The fields and other objects belonging to this form are now described in detail. Corresponding Oracle column names and data types are indicated in brackets after each field name.

Catalog Number (catno, integer 6) The primary key to the AGSOCAT table. This is an automatically-supplied incrementing integer. The field can only be entered by the user in query mode (after clicking on 'Find').

Entered (entrydate, date) The date the record was first created. This field is automatically filled when a new record is created. The field can only be entered in query mode.

By (1) (enteredby, 8 chars) The Oracle user ID of the person who created the record. This field is automatically supplied when a new record is created. The field can only be entered in query mode.

Updated (lastupdate, date) The date the last change was made to the record. This field is automatically filled whenever the record is updated. The field can only be entered in query mode.

By (2) (updatedby, 8 chars) The Oracle user ID of the person who last updated the record. This field is automatically supplied when a record is changed. The field can only be entered in query mode.

Scientific Project (projno, integer 6) The number of an AGSO scientific project from the SCIENTIFIC_PROJECTS table. This refers to the project that created the object to which the Catalog record applies, not the project to which any revenue is now credited (see Finance Code). May be selected from the list box provided.

Financial Code (fin_code, 5 chars) The finance 'sub-project code' that determines the allocation of revenue from the sale of a product. Not to be confused with the Scientific Project field above. A business rule built into the database kernel ensures this code must be entered for all Catalog entries classified as products. May be selected from the list box provided.

Product (product, flag) A single-character field that shows as a blue box when set to 'Y' to show that the Catalog object is an AGSO product handled by the AGSO Sales Centre. This field must be set to 'Y' if the product is to appear on AGSO's external web site for products (see Fig. 1).

Dataset (dataset, flag) A single-character field that shows as a blue box when set to 'Y' to indicate that the Catalog object is an AGSO dataset, such as an image, database extract, or GIS dataset. Click the button to change it. All GIS datasets should also have an entry in AGSO's ANZLIC-compliant GeoMet database.

Publication (publication, flag) A single-character field that shows as a blue box when set to 'Y' to indicate that the Catalog object is an internal or external publication, such as a paper, AGSO Record, or article. Click the button to change it. This flag determines what appears in the web interface for AGSO publications & papers (see Fig. 2).

Resource (resourcex, flag) A single-character field that shows as a blue box when set to 'Y' to indicate that the Catalog object is an AGSO corporate resource, such as a satellite image, topographic map or software package. Click the button to change it. Note that 'resource' is a reserved Oracle word — hence the 'x' added to the column name.

Web Visible (www, flag) Also known as the 'Web Flag'. A single-character field that shows as a blue box when set to 'Y' to indicate that the Catalog entry can now be seen on AGSO's external web site (Fig. 1.). If the Web Flag is set, all other flags may not be changed. If the Products Flag is set, the Web Flag can only be set by the Sales Centre. Similarly, if the Dataset Flag is set, only a Data Administrator can set the Web Flag. Initiators of external publications must wait seven days before they themselves can set this flag.

Title (title, 500 chars) Mandatory title for the Catalog object, as taken for the title page of a publication, the cover of a CD-ROM, etc. Do not add other information, such as 1:250 000 sheet numbers, unless that is a part of the formal title. If the object has no formal title, enter a brief but informative description. Do not enter uniformative titles like 'Digital data'!

Type (cat_type, 24 chars, mandatory) A first-order Catalog classification term, such as 'AGSO Publication', or 'Geological Map', from the CATTYPES lookup table. The list button should be used to select a valid term.

Subtype (cat_sub, 24 chars) A second-order Catalog classification term, such as 'AGSO Record' or '1:100 000 Geological Map', from the CATSUBS lookup table. The list button should be used to select a valid term.

Scale (scale, integer 8) An integer indicating the scale of a map, Explanatory Notes, flight-line diagram, image, GIS dataset, etc. — eg, 250000 for '1:250 000' scale. The list button gives quick access to commonly-used scales, but other scales may also be entered.

Source (pub_source, 128 chars) Applies only to written works. The journal, volume, magazine, newsletter, series, newspaper, monograph, symposium, etc., in which the paper, article or publication appeared. The list button gives access to some common 'sources' — eg, 'Australian Geological Survey Organisation, Record' — but any publication source may be typed into the field. For books or monographs that are not part of a series, just enter the publisher — eg, 'McGraw Hill, New York'.

Abstract (abstract, 2000 chars) Most Catalog objects should have an abstract, if only a short one. You may cut and paste the abstract from any electronic document such as a Microsoft Word Document. All non-printing ASCII characters are stripped off by a validation trigger on this field.

Pub Year (pub_year, integer 4) Applies only to written works. The year of publication. Four digits between 1800 and 2999 must be entered.

Volpart (volpart, 16 chars) Applies mainly to written works. The volume, number or part of the journal or series, plus the page numbers in the case of papers or articles — eg, '56 (3), 22-35'. The AGSO Record or Bulletin number must be entered here, or the Map ID in the case of maps from the 1:250 000 or 1:100 000 geological map series.

Medium (medium, 16 chars) The abbreviation for a medium from the CATMEDIA lookup table. Examples include 'PRINT', 'LITHO', 'CDROM', '3.5_DISK', 'FILM'. The list button should be used to select a value from the CATMEDIA lookup table.

Comments (comments, 200 chars) Any further comments the initiator wishes to add to the Catalog entry, about the entry.

Contact (contact, 32 chars) The name of a person, normally an AGSO staff member, who can be contacted for further information about the Catalog object — eg, 'Fred Smith'. Commonly the initiator, senior author or project leader. Should be the person who knows the most about the Catalog object.

Bounding Rectangle (n_lat & s_lat, decimal 2.4; e_long & w_long, decimal 3.4) The minimum bounding rectangle on the surface of the earth that encompasses the area to which the Catalog object refers, expressed in decimal degrees on the GDA94 (or WGS84) geodetic datum. Southern hemisphere latitudes, and also western hemisphere longitudes, must be entered as negative numbers. Up to 4 digits may be entered after the decimal point. All spatial Catalog objects should have a bounding rectangle, including publications covering specific areas.

N Lat	Latitude of the northern edge of the bounding rectangle.
S Lat	Latitude of the southern edge of the bounding rectangle.
W Long	Longitude of the western edge of the bounding rectangle.
E Long	Longitude of the eastern edge of the bounding rectangle.

A minimum bounding rectangle may also be selected by clicking on either the '1:100 000 MAP' or '1:250 000 MAP' button to select an area corresponding to a particular map scale and sheet area.

Authors (CATAUTHORS.author, 36 chars) The surname and initials of all the authors of the Catalog object (normally a publication), one to a line, senior author first — eg, 'Smith, J.G.'. The surname should come first and be in lower case, except for an initial capital letter (not always the case, eg, "d'Addario"). The surname should be followed by a comma, a space and the author's initials in upper case, each terminated by a full stop. The sequence number is supplied automatically, but the field can be changed in

update mode to allow the re-ordering of the author list. Most Catalog objects should have at least one author, and all authors should be entered.

Search by Author Button This button allows users to query the Catalog by one, two or three authors. Just press the button and fill in the resulting dialog box. You may use Oracle wildcards in the names entered — eg, 'Smith%'.

Themes (CATTHEMES.theme, 24 chars) Theme words or phrases from the THEMES lookup table, one to a line. The list button gives access to all currently valid themes. Any number of relevant themes may be entered. These fields give the Catalog a keyword capability.

Search by Theme Button This button allows users to query the Catalog by one, two or three themes. Just press the button and fill in the resulting dialog box with the themes on which you wish to retrieve.

Web Links (CATURLS.url, 100 chars) URL addresses of web pages with information or other material relevant to the current Catalog object — for example, images, maps or descriptions. In general these will always start with 'http://', and will show as blue underlined references on web interfaces to the Catalog — such as the 'Products Database' (Fig. 1).

Reports The 'Print Entry' button at the bottom of the form, to the left, allows the user to print out a full report (see Appendix D) of the current Catalog entry. This is accomplished, albeit rather slowly at present, via a PDF file which is automatically displayed on a standard 'Adobe Acrobat' reader. It may be printed to your normal local printer for desktop applications.

Additional Links The Initiator's Form also has buttons at the bottom for branching to other forms for the entry of computer file pathnames, images and documents that may be associated with the Catalog object. If any such entries already exist, the buttons will indicate the number of entries attached to the current Catalog object — eg, "3 Files" otherwise they indicate "No Files", etc. The forms accessed from these buttons are described later under the appropriate section headings.

Approval Forms The two buttons at the bottom right of the form allow users to print out the standard approval forms for publications (Appendix B) and datasets (Appendix C). The same PDF-file method applies as for reports (see above). Note that the one publication approval form now covers both internal and external publications.

7 - THE CATALOG QUERY & ADMINISTRATION FORM

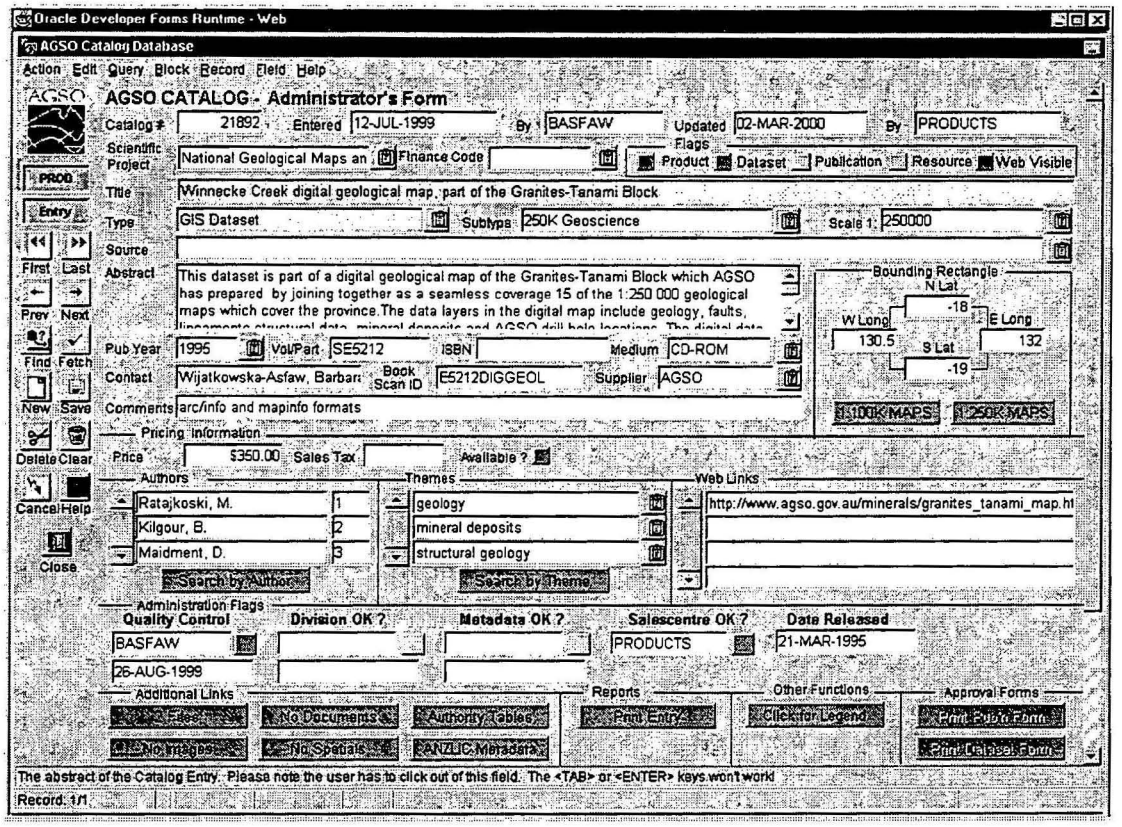

Figure 9. The AGSO Catalog Query & Administration Form.

The Query & Administration Form (Fig. 9), which is essentially a more comprehensive version of the Initiator's Form, gives ordinary users read access to all Catalog entries and fields. It also allows those with the '*agsocat_data_admin*' role to insert or change data as necessary. This allows data adminstrators to set or unset any flags and make or unmake any 'sign-offs' that may be required. The majority of fields on the Query & Administration Form have already been described for the Initiator's Form. Those that have not are now described:

ISBN (isbn, 12 chars) The International Standard Book Number, which is supplied by AGSO's library for all new AGSO publications such as Records and Bulletins. The procedure for AGSO publications is that the 'permission-to-publish form' printed from the Initiator's screen form first goes to the Division Chief for signature, and then to the AGSO Library for allocation of ISBN number. Except in the case of externally published works, the library should enter the ISBN number using this form.

BookScan ID (bookscan_id, 16 chars) Products that have come from the old BookScan point-of-sale system should have an ID from that system. New Catalog entries do not. BookScan IDs must be unique.

Supplier (supplier, 6 chars) Defaults to 'AGSO'. The acronym of the organisation that is the primary supplier of the Catalog object. Some products sold by AGSO's Sales Centre are produced by organisations other than AGSO. Choose an acronym from the list provided from table CATSUPPLIERS.

Price (price, number 6.2) Applies to products alone, and can only be entered by AGSO's Sales Centre.

Sales Tax (sales_tax, number 6.2) Applies to products alone, and can only be entered by AGSO's Sales Centre.

Available ? (available, flag) A character that shows as a blue button when set to 'Y' to indicate that the Catalog object is available from the AGSO Sales Centre (or in future, online), and not out of print etc. Applies only to products from the AGSO Sales Centre and can only be set by the Sales Centre.

Administrative Sign-Offs The sign-off fields at the bottom of the form consist of a field for the administrator's Oracle username and the current date. These can be set and unset simply by clicking on the associated button. These fields are intended to act like a signature on a paper form to say that the appropriate permissions have been given, or QC checks performed. Whether these are needed, or not, depends on the particular Catalog object. Provision has been made for several checks, before Catalog objects are passed as fit for public consumption. To what extent these are used will depend on future requirements of AGSO Divisions and corporate areas. Further business rules can be easily added as the need arises.

Quality Control ? (q_control_ok, 8 chars; qc_date, date) Now applied to GIS datasets, but should be extended to most AGSO outputs. Could also be used for publications to indicate peer review completion.

Division OK ? (division_ok, 8 chars; dv_date, date) Intended to indicate that the Chief of Division, or delegate, has approved the output — of an internal or external publication, for example.

Metadata OK ? (metadata_ok, 8 chars; md_date, date) Exists specifically to QC the metadata in the Catalog entry. The Sales Centre will pass this check for all AGSO products that have not already been checked for metadata quality and completeness at the divisional or corporate level. Entries that are not up to scratch may be passed back to the initiator.

Sales Centre OK ? (salescent_ok, 8 chars; released, date) This is the Sales Centre sign-off procedure that all AGSO products must undergo. This also determines the release date for the product.

In addition to the buttons described in the Initiator's form, the Administrator's form has buttons for branching to the Spatial Metadata Form for the entry of metadata points, lines and polygons, and to the GeoMet ANZLIC-compliant metadatabase for AGSO's spatial datasets. The paper permission forms for AGSO publications and datasets may also be printed from the Administrator's form (see Appendix B & C).

8 - THE CATALOG FILES FORM

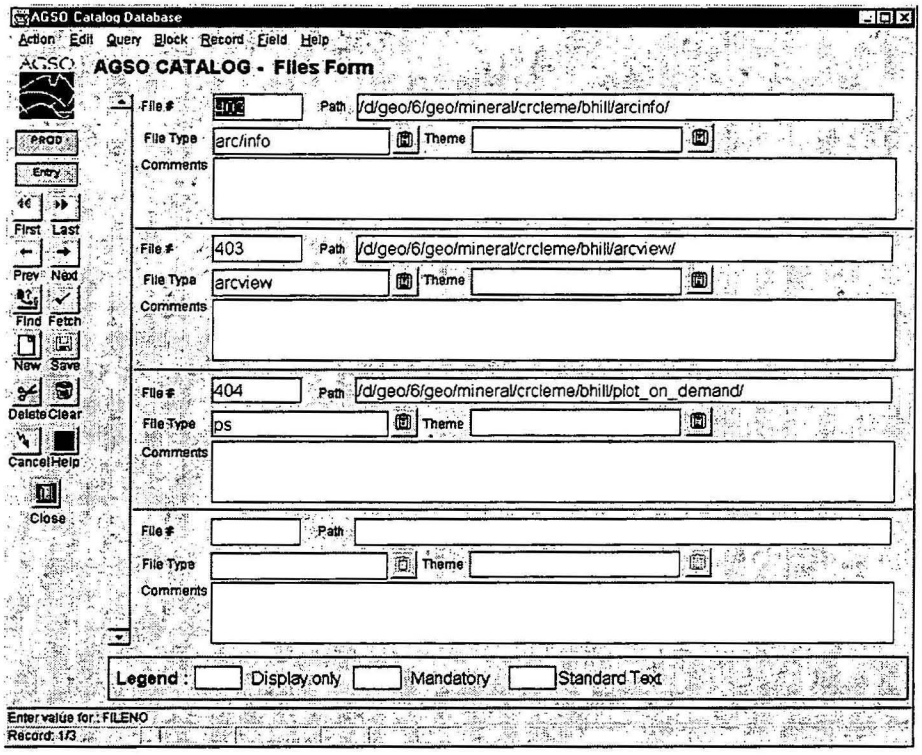

Figure 10. The AGSO Catalog Files Form.

The Catalog Files Form may be accessed from either the Initiator's or Administrator's Form. Any number of computer files (or directories) may be linked to a Catalog entry. These files must be housed in the AGSO Corporate Data Store, and not on individual workstations or project servers. See the Staff-Only section of AGSO's web site for notes on the structure of the Corporate Data Store (Disk System) — the GIS Data Group under Geoff Lawford is the current custodian. The initial purpose in linking these files to the Catalog is to establish an index of corporately important computer files, but further down the track we envisage client-driven Internet access to these files, and ultimately fully-automated Internet commerce.

Sun's NFS (Network Filing System) pathnames must currently be used for all such computer files or directories, but we anticipate that Oracle's IFS (Internet Filing System) scheme may possibly take over when Oracle version 8i is put into production. This will uniquely identify files stored in the Oracle database management system. Alternatively, one of the other object reference systems, such as the CORBA (Common Object Request Broker Architecture) open standard, Sun's EJB (Enterprise Java Beans), or Microsoft's DCOM could be used. In all these systems the files remain uniquely identified and accessible, regardless of their changing physical location. The main problem with traditional file pathnames is that they suffer from frequent changes — as when hardware is upgraded, etc. Object references, once assigned, are never changed. They allow files to be quickly found, anywhere on the network.

The AGSO Catalog Files Form is invoked by pressing the 'Files Form' button at the bottom of either the Catalog Initiator's or Administrator's Form.

File No. (fileno, integer 7) The automatically supplied primary key to the CATFILES table. This field can only be entered in query mode.

Path (pathname, 128 chars) The NFS pathname of a file on AGSO's Corporate Data Store. These pathnames will probably be replaced at a later date by object references of some sort.

File Type (filetype, integer 16) Select a file type from the list of values obtained by clicking on the list button. This refers to the type of computer file or directory — eg, 'ascii', 'binary', 'msword' 'pdf', 'arcinfo_directory', 'gif', 'jpeg' etc. — as entered in the FILETYPES lookup behind the list of values for this field. If you need new file types in this table, see the custodian, currently Geoff Lawford.

Theme (theme, integer 24) Select a theme word or phrase from the list of values obtained by clicking on the list button. Only one theme can be selected for each file. The lookup table, called THEMES, is the same as that used by the Catalog itself. The custodians of this table are currently Geoff Lawford, Jon Stirzaker and Dave Harris.

Comments (comments, 128 chars) Any comments on the file or directory. In the case of whole directories, comments are usually needed as to the various files in or beneath the stated directory.

In addition to the fields shown in the Catalog Files Form, there is also a column in the CATFILES table called 'Medium', that presently defaults to 'CORPDATASTORE'. If, in the future, files are stored elsewhere other than in the Corporate Data Store, then this field will be added to the Catalog File Form.

9 - THE CATALOG DOCUMENTS FORM

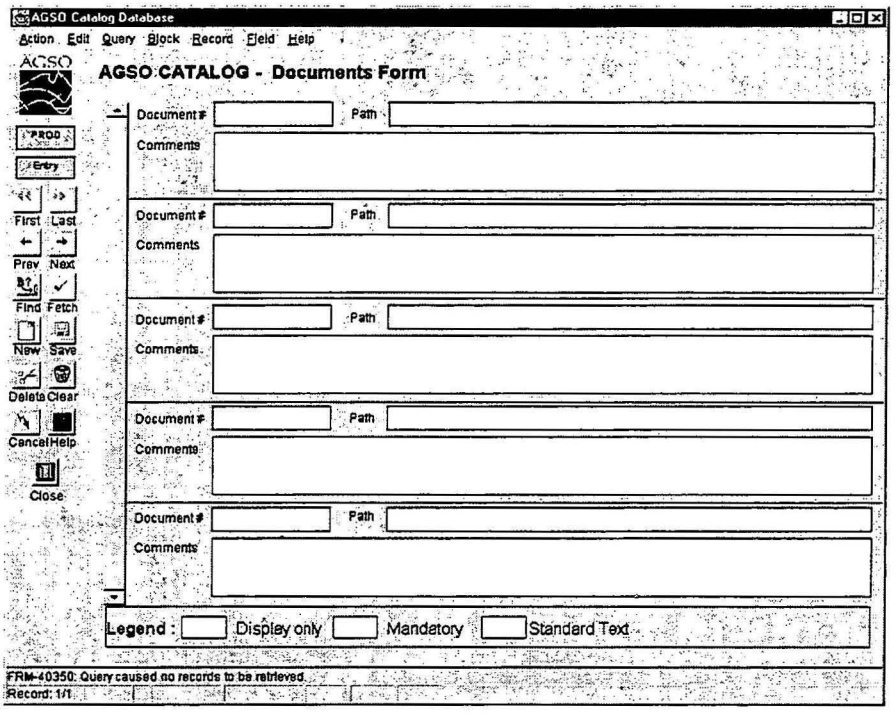

Figure 11. The AGSO Catalog Documents Form.

This form was originally envisaged as a means of connecting a Catalog record to one or more PDF (Public Document Format) files, for public viewing on AGSO's external web site. However, for this to work at present the PDF files must be stored on the disk directories belonging to AGSO's web and intranet servers. Document files can be added to the web site via the normal change-control mechanisms. Both internal and external versions must exist in similar manner to static HTML web content. Of course, any copyright issues must be resolved before previously published documents can be placed on the web, but many AGSO Records, particularly those more than a year old, are obvious candidates for web publishing.

However, we anticipate that with the advent of Oracle 8i the document files will be able to be stored within the database management system itself, and will be displayed both internally and externally from the one copy. We also expect that users will be able to add documents to the database with a simple drag-and-drop mechanism, thus allowing the easy but controlled addition of documents to AGSO's web site. In all cases, the metadata on the document will be required in the Catalog.

This will pave the way for full-blown online publishing. All that is required to resurrect the old, expensive 'AGSO Journal' as a new, cheap online publication is the addition of a new class of object in the Catalog ('AGSO Online Journal Article') and the erection of a simple user interface on the web. The publication of articles will no longer have to meet some specific publication date. They can appear as soon as they have been edited.

Document No. (doc_no, integer 7) The automatically supplied primary key to the CATDOCS table. This field can only be entered in query mode.

Path (pathname, 128 chars) The pathname of a PDF document file on AGSO's web site. These pathnames may be replaced at a later date by object references of some sort.

Comments (comments, integer 512) Any comments on the document the user feels are relevant

10 - THE SPATIAL METADATA FORM

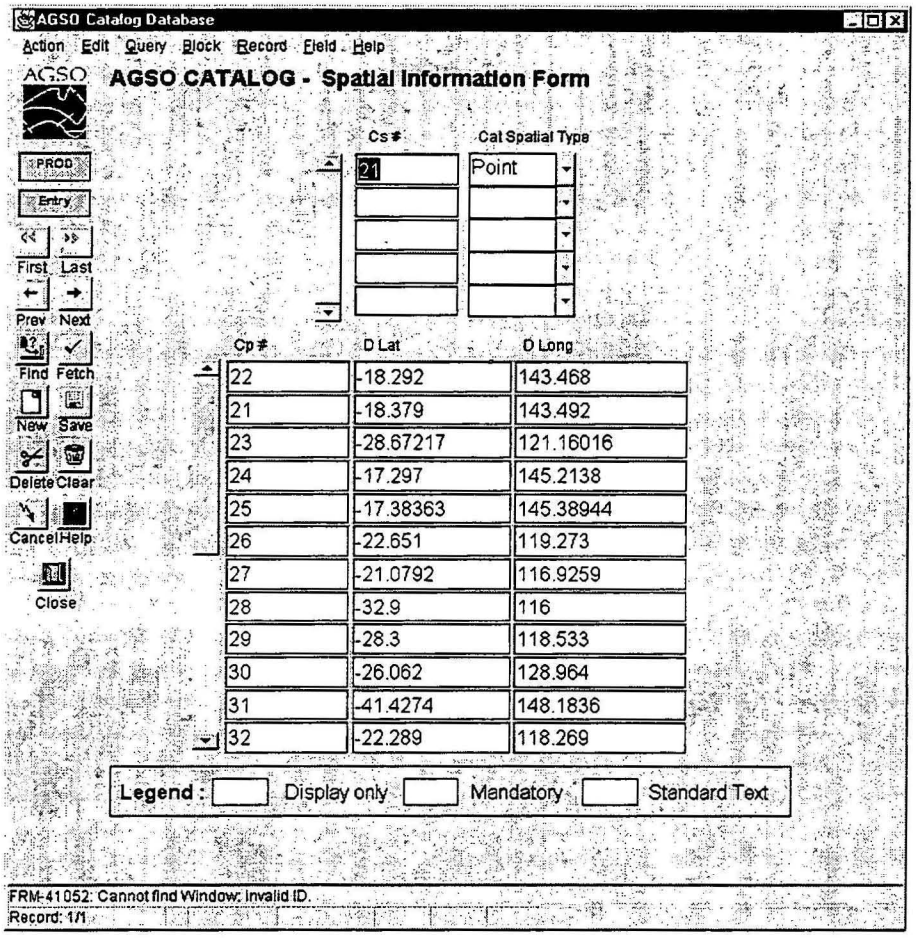

Figure 12. The AGSO Catalog Spatial Metadata Form with point metadata from the OZMIN database – see Catno 23723.

The Catalog Spatial Metadata Form covers the Catalog's CATSPATIAL and CATPOINTS tables, which contain spatial metadata in the form of points, lines and polygons. It is accessed from the 'Spatials' button on the Administrator's Forms. Any single Catalog record can be attached to any number and combination of points, lines and irregular polygons. The example illustrated in Fig. 12 contains point location data for mineral deposits (over 1300 of them) that are attached to the OzMin Database entry in the Catalog and have been transferred from the OzMin Oracle database. Most users will have no need to enter spatial metadata by hand, although the entry of an irregular polygon could be an occasional requirement. The data entered into these tables will more normally be transferred from existing databases using SQL*Plus. Other possibilities include multiple seismic lines from seismic surveys, and irregular polygons outlining the extent of airborne geophysical surveys.

Our current web interfaces do not yet have provision for real-time display of spatial metadata of this sort, but this should be fairly easy to implement. In the meantime, flat files can be extracted that are suitable for display on the existing 'Data Locator'.

Cs No. (cs_no, integer 7) An automatically supplied primary key to the CATSPATIALS table. This field can only be entered in query mode.

Cat Spatial Type (cs_type, 1 char) The type of spatial object or objects attached to the Catalog object — ie, points, lines and polygons. Note that these are indicated in the CATSPATIALS table by a single letter — 'P', 'L' or 'X'.

Cp_No. (CATPOINTS.cp_no, integer 8) An automatically supplied primary key to the CATPOINTS table. This field can only be entered in query mode.

D Lat (CATPOINTS.dlat, integer 8,6) The decimal latitude (GSA94 Datum) of a point or a node on a line or polygon.

D Long (CATPOINTS.dlong, integer 9,6) The decimal latitude (GSA94 Datum) of a point or a node on a line or polygon.

11 - THE CATALOG IMAGES FORM

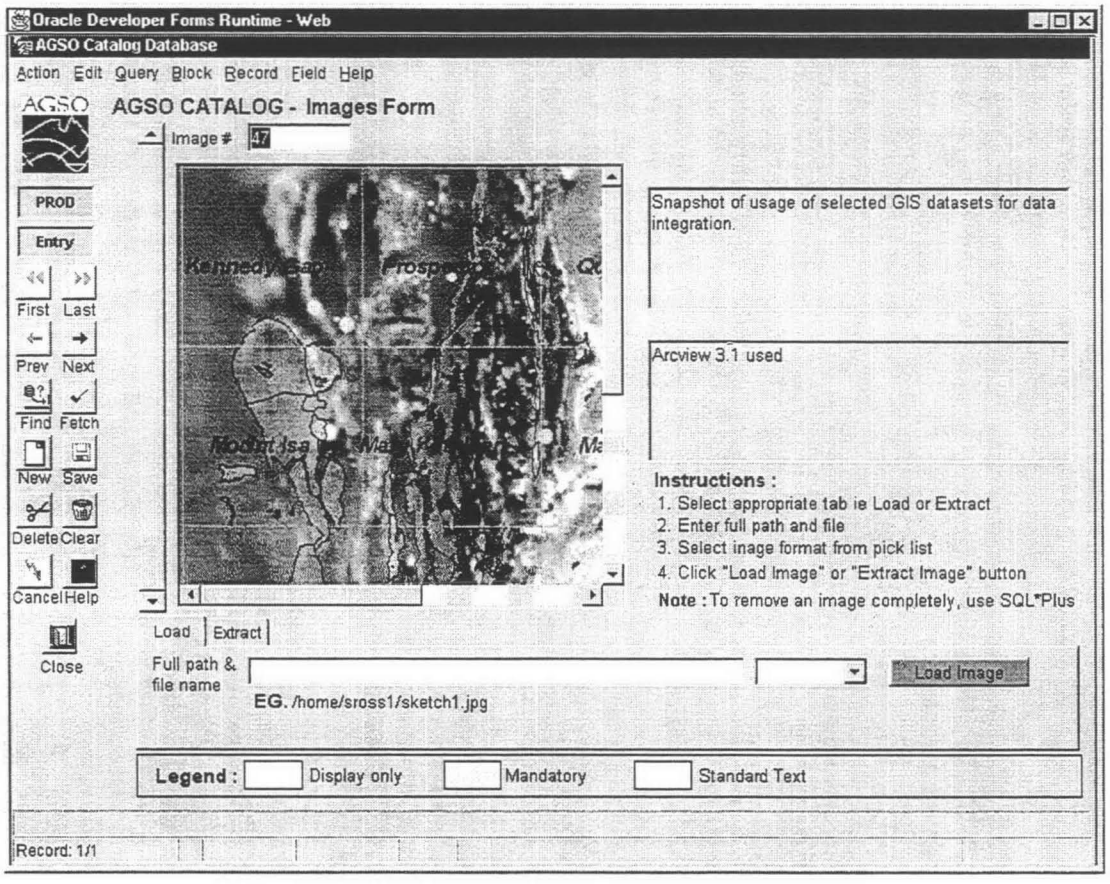

Figure 13. The AGSO Catalog Images Form.

The Catalog Images Form, which covers the CATIMAGES table, is for attaching thumbnail images to any Catalog object. It is accessed from the 'Images' button on the Initiator's or Administrator's Forms. Any single Catalog record can be attached to any number of images. The images loaded via this form are intended for display on AGSO's web site, but the means of doing this must await Oracle Version 8I with 'InterMedia', which allows images and documents to be much more easily presented on the web. The images can be exported to UNIX files using the button provided for the purpose.

Image No. (image_no, integer 7) An automatically supplied primary key to the CATIMAGES table. This field can only be entered in query mode.

Caption (caption, 128 chars) A field for a caption for the image for web display.

Comments (comments, 512 chars) Any comments about the image. Can amount to a small abstract, if needed

Load Image Button - Beneath 'Load' Tab Images can currently be loaded only in the X-Windows (Exceed) environment. To load an image into the form from an image file, enter the pathname of a GIF, JPEG, BMP or TIF Unix file and press the button. The image must then be saved to the database, of course.

Extract Image Button – Beneath 'Extract Tab Images in the database can be exported to a Unix file in any of the above formats with the help of the export button. Images can currently be exported only in the X-Windows (Exceed) environment.

12 - THE AUTHORITY TABLES FORM

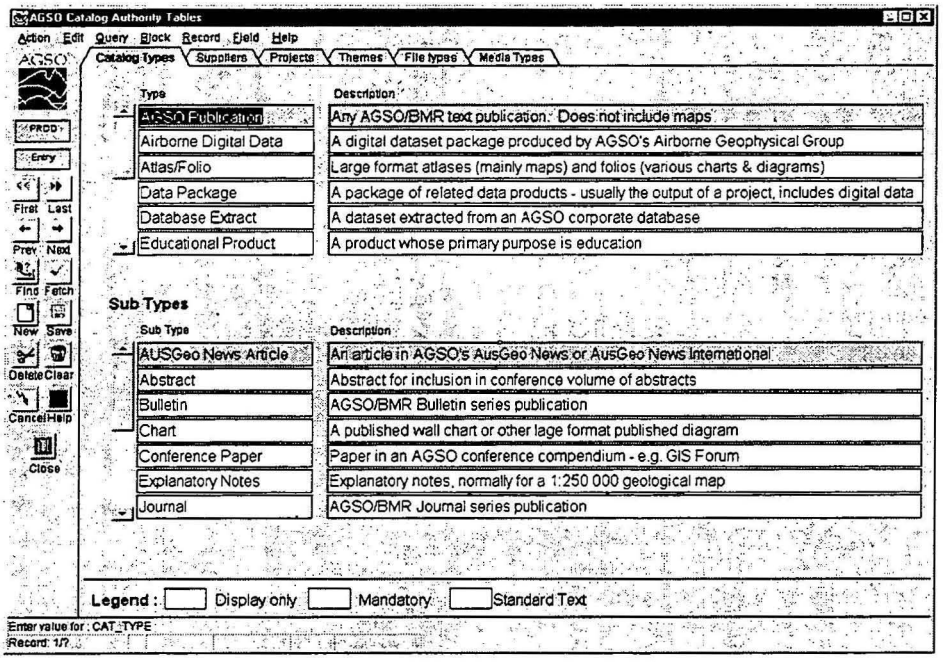

Figure 14. The Catalog Authority Tables Form.

This form gives access to all the Catalog authority tables (see list on page 10), which contain the lookup data used to validate entries into individual fields in the Catalog's main data tables. The individual tables can be seen by clicking on the appropriate tabs at the top of the form. The data in these tables can be seen by all users, but their contents can only be changed by the custodians with an *'agsocat_admin'* role. If you think changes or additions are needed to any of the validation data in these tables then you should see the custodian for the particular table and put your arguments. In all cases the field definitions of the primary keys in these tables — eg, 'Type' and 'Sub Type' in Fig. 14 — are the same as the corresponding foreign keys in the main data tables.

The screen illustrated in Fig. 14 shows the Catalog Types subform, a master-detail form that covers the CATTYPES and CATSUBS tables and determines the two-fold classification scheme used by the Catalog. As the cursor is moved between the 'type' records in the top block of this form, the 'subtypes' belonging to that type are displayed in the bottom block. For example, the type 'AGSO Publication', corresponds to a number of subtypes, including 'Bulletin', 'Record', 'Explanatory Notes', etc. You will need to scroll the bottom block to see them all.

The other subforms that make up this compound form are mostly simple single block (table) forms that need no individual explanation. However, the AGSO Scientific Projects subform is an important authority table used by other corporate information systems and also displayed in part on AGSO's external web site.

13 - COMPREHENSIVE REPORTS

In addition to single dataset reports, which are generated by pressing the appropriate button at the bottom of the Initiator's (Fig. 8) or Administrator's (Fig. 9) screen forms, comprehensive reports may be obtained from the database as a whole. These require the input of selection criteria and include information on all associated files, documents and images (see Appendix D). To generate comprensive reports click on the 'Catalog Reports Menu' button on the AGSO Catalog Main Menu (Fig. 7). The following menu is displayed:

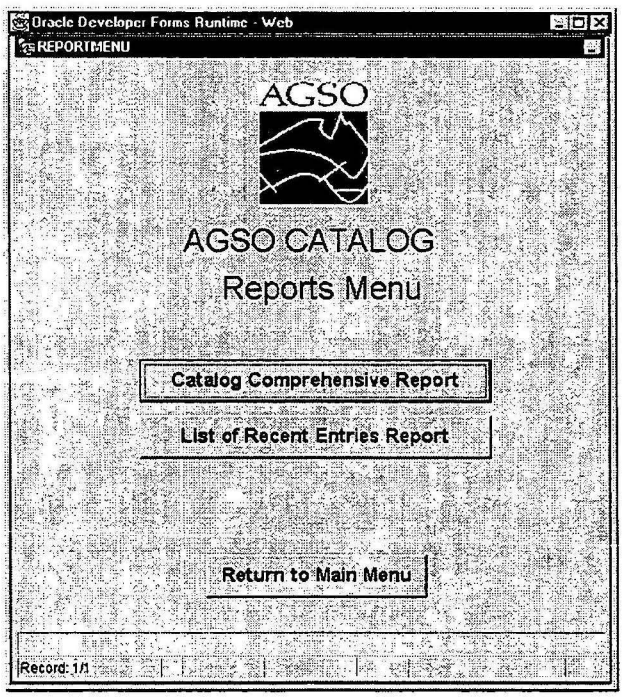

Figure 15. The AGSO Catalog Reports Menu.

Although there are only two comprehensive reports available from this menu at present, others may be added in the future. To run the comprehensive report against multiple Catalog entries (as opposed to the single entry comprehensive report mentioned above), press the 'Catalog Comprehensive Report' button on the Catalog Reports Menu in Fig. 15. At present, the user must run this report in the X-Windows environment, using PC Exceed software. In this environment the reports are usually saved as a Unix file, and then transferred to the user's PC using 'Samba' Unix directory mapping, or FTP software such as 'Leech'. However, a web version of this report should be available by the time this Guide is published, or shortly after, and its output will be sent directly to your PC as a PDF file.

Press the 'Catalog Comprehensive Report' button to obtain the form for entering your report query criteria. When running the X-Windows version of the Comprehensive Catalog Report the user must enter query parameters into forms shown below in Fig. 16:

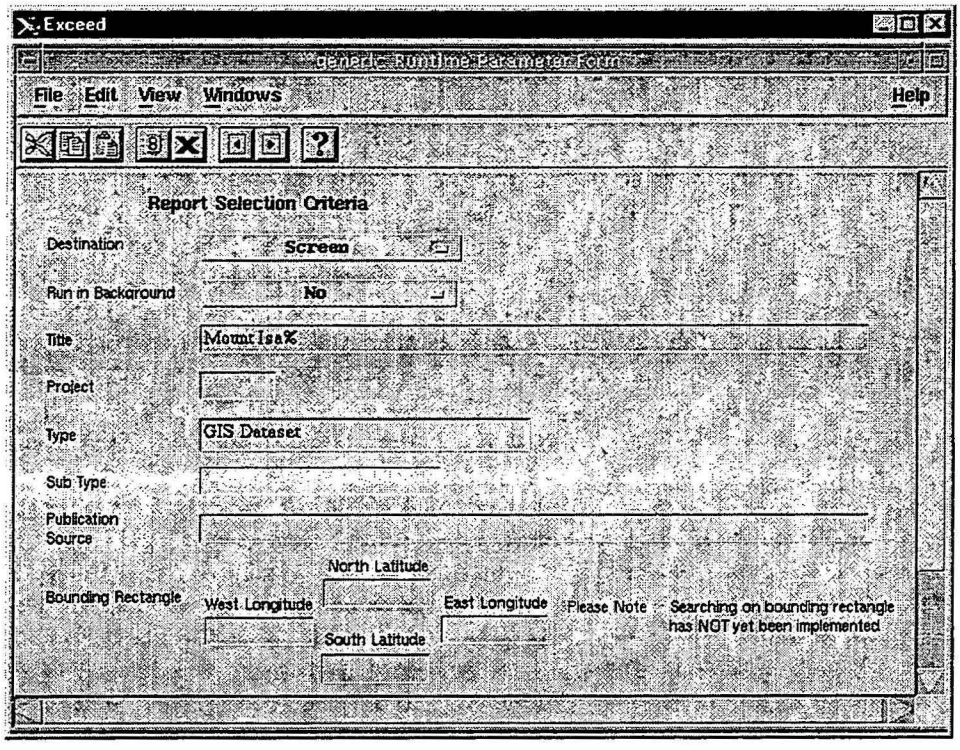

Figure 16. The Query Parameter Form for the Catalog Comprehensive Report.

This parameter form allows users to select Catalog objects for inclusion in the report according to Title, Project, Catalog Type, Subtype and Publication Source. It also allows them to choose the destination of the report — screen or file — and whether the report should be run in the Unix background or foreground. The output from this report looks like that shown in Appendix D, except that many Catalog objects can occur in any one report, depending on the query criteria that were entered by the user. This query criteria form is currently a little rudimentary, but it can easily be expanded to include other query criteria. Web versions of reports will use normal Oracle forms to enter query criteria.

The second report program included in the Reports menu shown in Fig. 15 is a recent addition. It allows the user to select reports of the latest products entered in the Catalog for periods including the last week, two weeks, month, 6 months and year. The reports produced are not comprehensive. Only a summary of the information in the Catalog for each product is displayed.

14 - CATALOG WEB INTERFACES

The Data Locator Map Interface

The Catalog presently has three publicly visible web interfaces — the 'Products' dataset on the Data Locator Map Interface, the 'AGSO Products Query and Order System' (Fig. 1) and 'Publications and Articles by AGSO Staff' (Fig. 2). The Data Locator Map Interface is found by clicking on the 'PRODUCTS' bar on the left side of AGSO's home page, then on Data Locator Map Interface at the top of the resulting Products page. The opening screen of the @ngis Data Locator should now appear, showing a map of Australia. Click on the part of Australia in which you are interested and you should see a screen like that in Fig. 17.

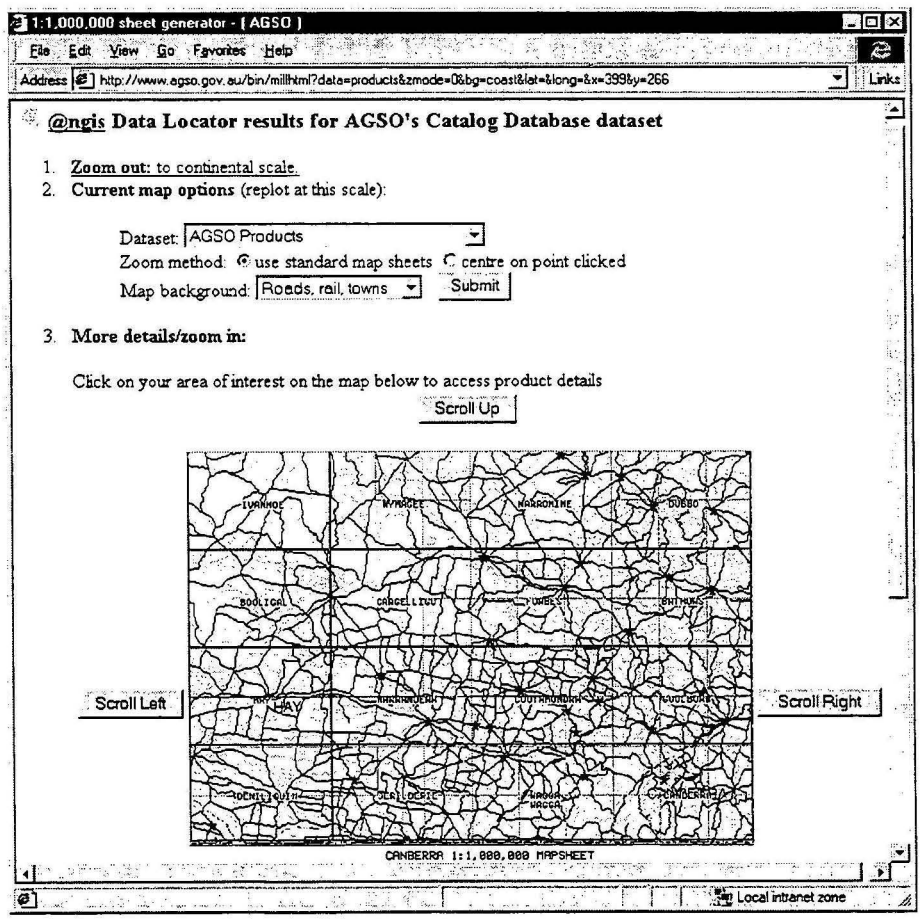

Figure 17. The Data Locator zoomed in to the Canberra 1:1 000 000 sheet area.

'AGSO Products' is the default dataset displayed. The user should be aware that only those products that have been given a bounding rectangle will be retrievable via this interface. With the 'use standard map sheets' option selected, click on a 1:250 000 map sheet area to obtain a list of all products whose bounding rectangles overlap the selected sheet area. The start of the list for the Canberra 1:250 000 sheet is shown in Fig. 18.

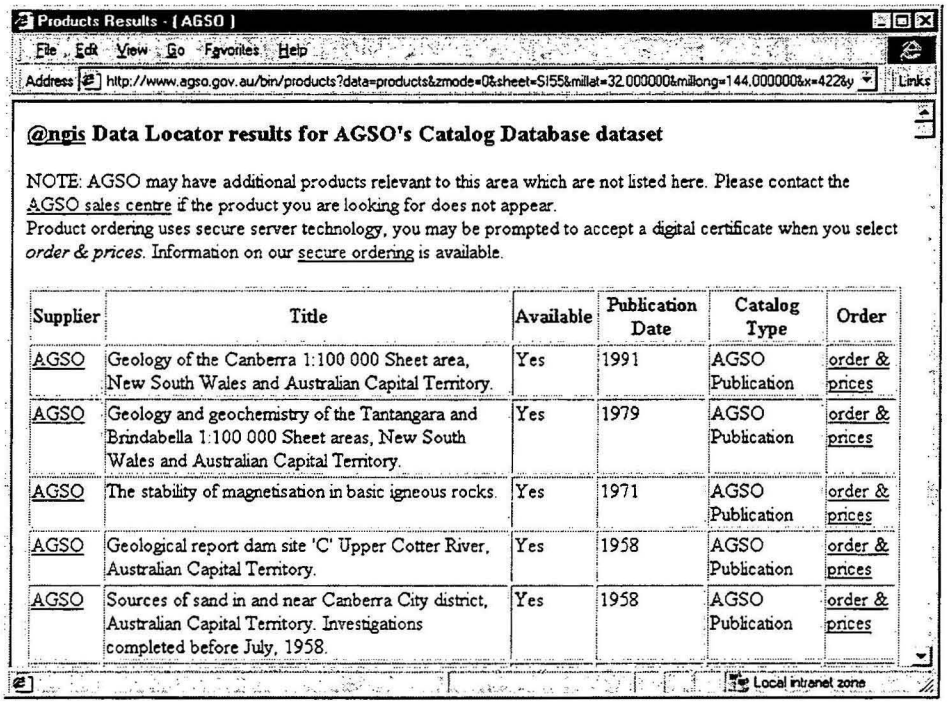

Figure 18. The beginning of a long list of products from the Data Locator Map Interface for the Canberra 1:250 000 sheet area.

To order a product click on order & prices in the Order column of the report table. The full details for the product are now displayed (Fig. 19) and the product can be ordered on line.

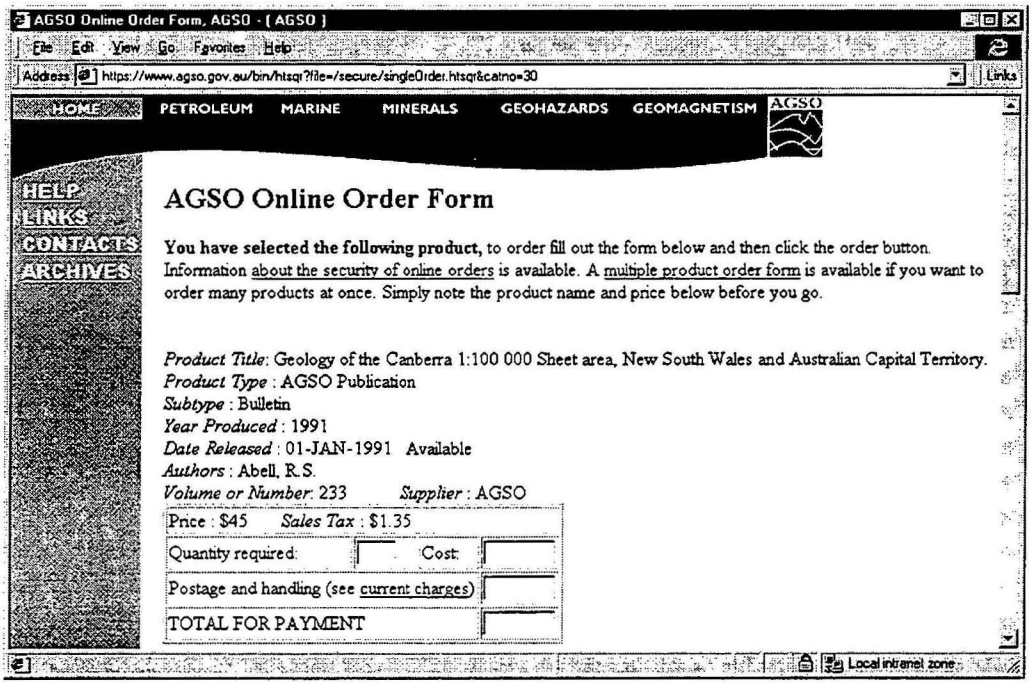

Figure 19. The full details of a product that may be ordered on line by filling in the customer and payment details, which can be seen by scrolling the form down further.

The AGSO Products Query and Order System

The text-based query form for the 'AGSO Products Query and Order System', shown in Fig. 1 in the Introduction, may be reached from either the 'PRODUCTS' or 'DATABASES' pages, both of which are linked directly to AGSO's home page. The interface includes tips on searching the database, as well as the ability to list out all or part of the validation tables and views that are relevant to the interface. If the phrase 'Mount Isa' is entered into the title field of that query form a summary list of matching products is obtained.

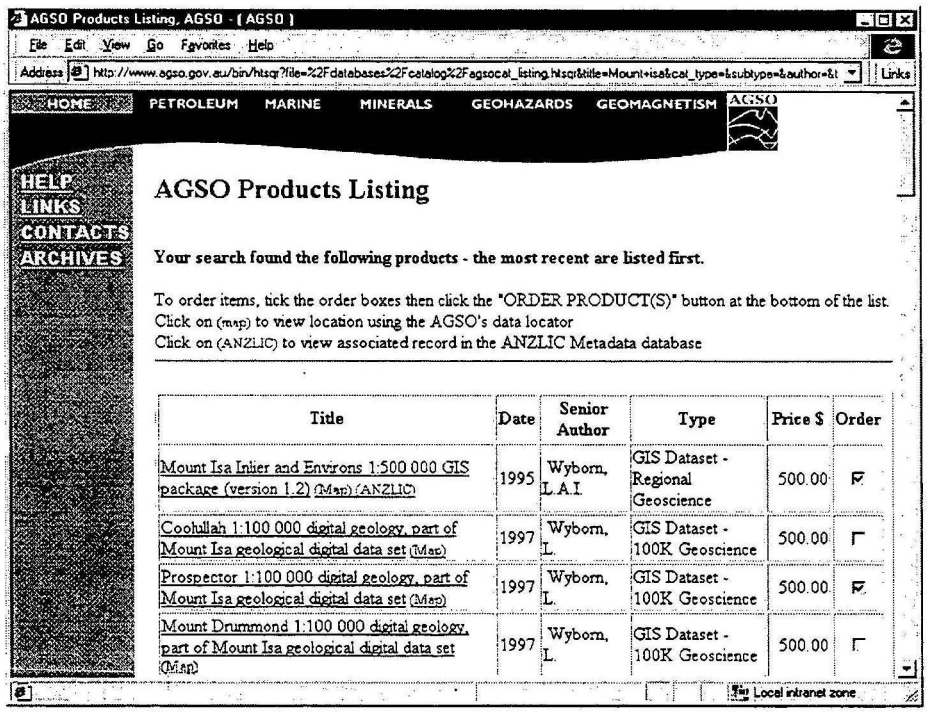

Figure 20. The beginning of a long product summary list generated when 'Mount Isa' was entered as a query criterion in the 'title' field of the web query form shown in Fig. 1.

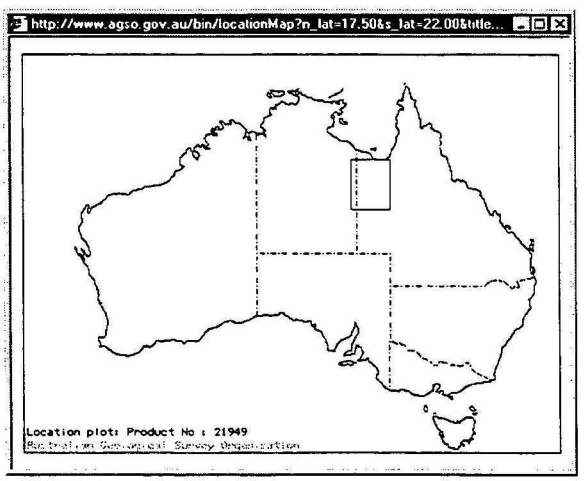

Figure 21. The web map seen by clicking on (Map) for the first product shown in Fig. 20.

Those products that appear in the products list with the red underlined (Map) link appended have a bounding rectangle in latitude and longitude. The location of this rectangle on the map of Australia may be viewed by clicking on the (Map) link, as illustrated above in Fig. 21. Those products with entries in the GeoMet Spatial Metadatabase are masked by the red underlined (ANZLIC) link, representing the ANZLIC compliant metadata set in that metadatabase. Click on this link in the first product listed in Fig. 17 to obtain a complete report on that dataset in GeoMet — similar to the one illustrated in Fig. 3 of the Introduction.

To see a complete report from the Catalog for a particular product, click on the blue underlined title link in the summary list. The product details for the first product listed in Fig. 20 are illustrated below in Fig. 22.

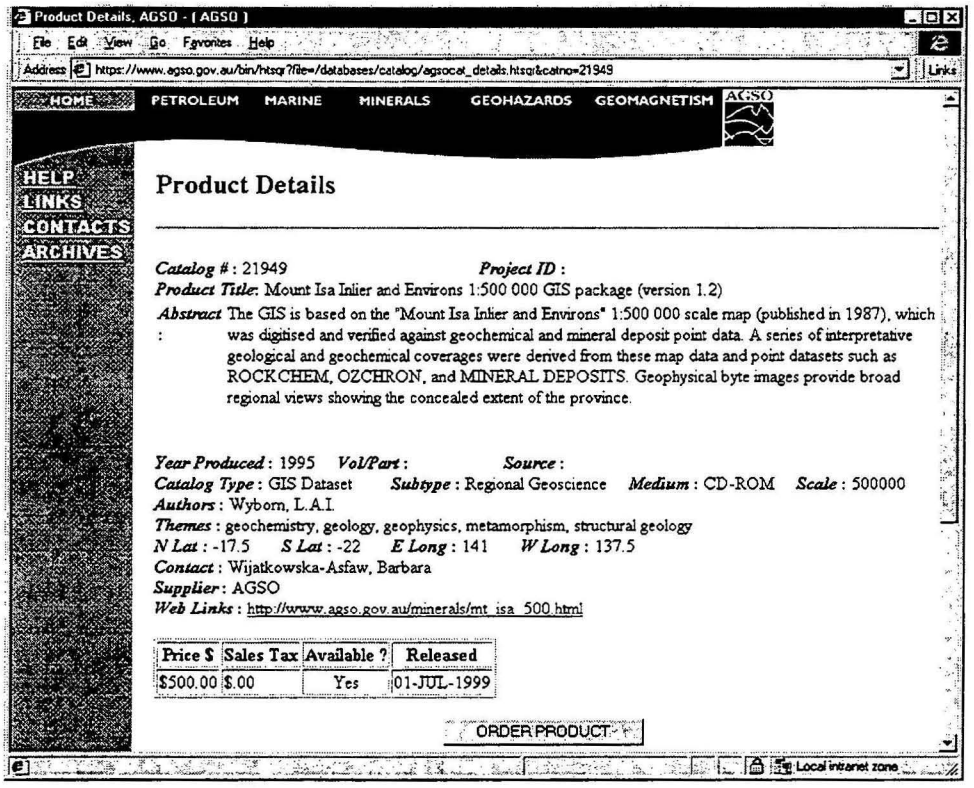

Figure 22. The complete details from the Catalog for the first product listed in Fig. 20.

Note the web link URL address shown in Fig. 22 is displayed underlined and in blue, as a functioning web link. Similar links to thumbnails and documents will soon be added after AGSO's database server has migrated to Oracle Version 8i. Individual products may be ordered from here by clicking on the 'ORDER PRODUCT' button.

A mechanism has also been provided for ordering multiple products at one time from a product summary list such as the one represented in Fig. 20. Online customers first click on the 'order boxes' on the right hand side of the summary products list to place a tick against the products they wish to order. In Fig. 20 the first and third products listed have been ticked. They then click on the 'ORDER PRODUCT(S)' button at the bottom of the summary list to move to the order form illustrated below in Fig. 23. To prevent any misunderstanding, summaries of the ordered products appear automatically at the top of the order form. This is

not yet a true 'shopping basket' system, as the customer can order multiple products only from one product summary list at one time. If the customer has to re-query the Catalog to obtain another product summary list, they must then fill out another order form.

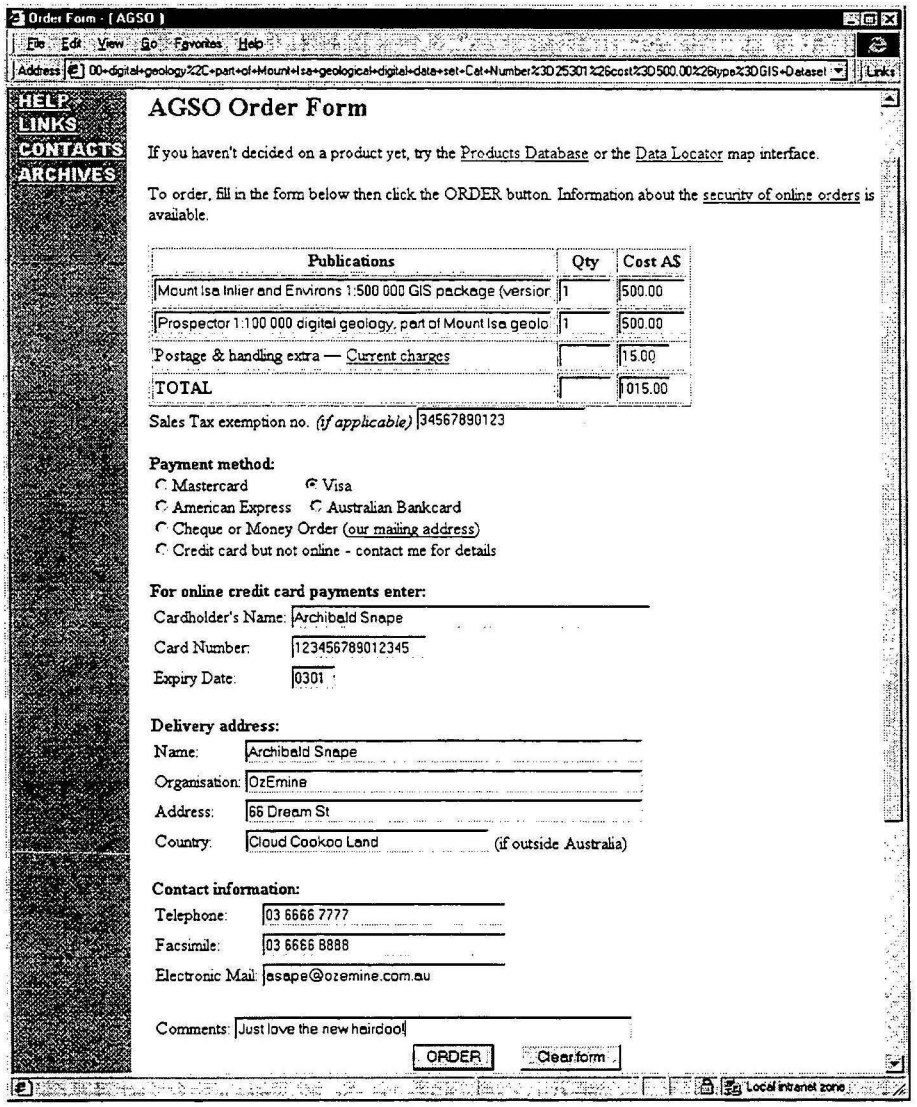

Figure 23. A completed online order form for the two products ticked in Fig. 17.

Customers are currently required to add postage and handling charges to the order form, which they obtain by clicking on current charges near the top of the form. The rules governing the calculation of charges are currently being simplified, and should be automated in time for the introduction of a proper shopping basket mechanism. The information entered into the order form by customers is perfectly secure, as it is currently passed through AGSO's firewall to the Sales Centre as a strongly encrypted e-mail message. Client interaction is also kept confidential through the use of Secure Sockets layer (SSL). The details of payment, such as credit card numbers (if supplied), are kept by the Sales Centre no longer than needed to process the order. This system of product ordering will eventually change to a commercial three-way transaction system involving encrypted access to the banking system. All AGSO then needs to know is that the transaction has been honoured by the bank, or otherwise.

Publications and Articles by AGSO Staff Members

The third web interface involving the Catalog, and the most recent, is the query system for publications and articles by AGSO staff members. This is accessed from the 'DATABASES' link on AGSO's home page. The query form for this system has already been seen in Fig. 2 in the Introduction. As in the Products interface, a variety of selection criteria may be entered into this query form to limit the number of references retrieved. The interface includes tips on searching the database, as well as the ability to list out all or part of the validation tables and views that are relevant to the interface. The beginning of the bibliography produced when 'GIS' is entered in the title field of the query form is illustrated below in Fig. 24.

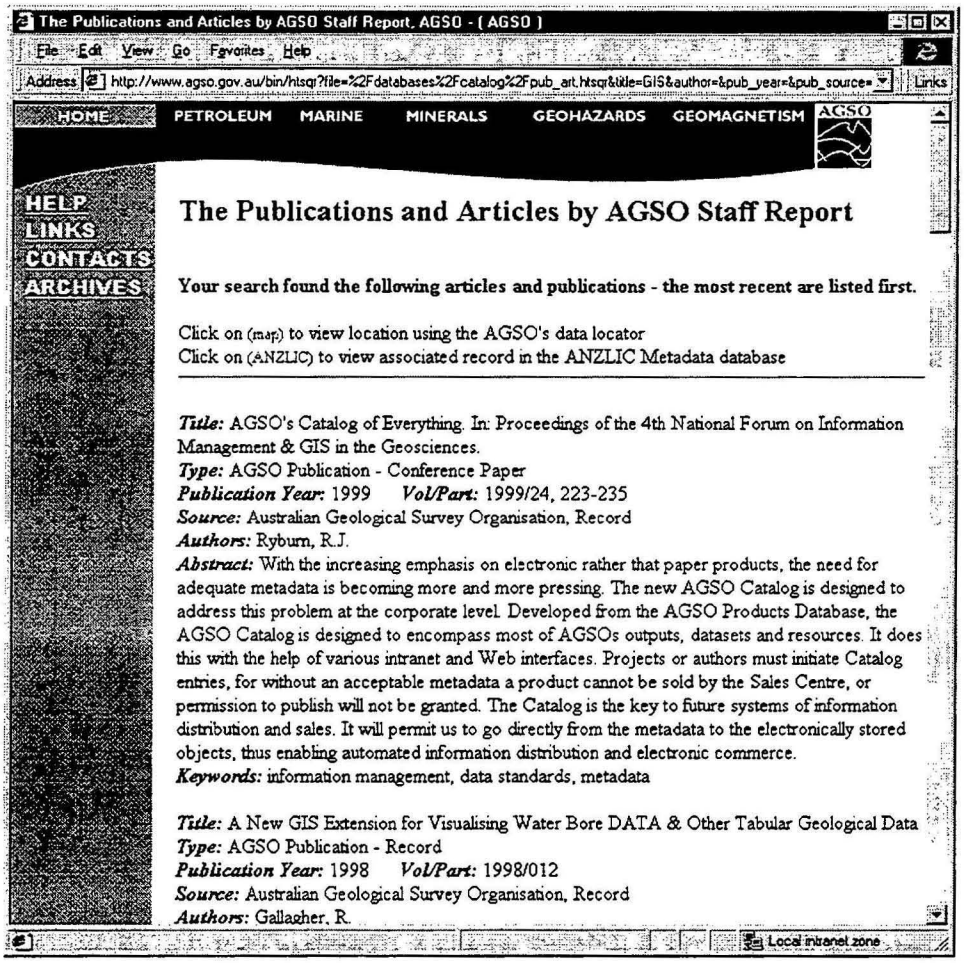

Figure 24. A list of publications and articles obtained by entering 'GIS' as a selection criterion into the query form for publications and articles by AGSO staff shown in Fig. 2.

In similar fashion to the products interface, live (Map) and (ANZLIC) links, where present, lead respectively to spatial map representations, similar to that in Fig. 21, and the equivalent GeoMet metadata entries. Publications that are also datasets belonging in the GeoMet spatial metadatabase include all published geological 1:100 000 and 1:250 000 map sheets.

15 - ACKNOWLEDGEMENTS

The AGSO Catalog has resulted from the input of many people. Charlie Modrak was of considerable assistance during the initial design work and the transfer of data from the BookScan system. Ian O'Donnell, Anne Franklin, Jonathon Root, David Harris, Judy Kley and Jim Mason all contributed to the codification of business rules and the design of screen and permission forms. Barbara Wijatkowska-Asfaw spent many hours massaging and cleaning existing data in the Catalog, and transferring new data from the Sales Centre. Jonathon Root built the Data Locator Map Interface on AGSO's web site and also helped establish the online product ordering system.

This Record has benefited greatly from reviews by Jonathon Root and Sonja Lenz.

16 - REFERENCES

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APPENDIX A - AGSO CATALOG SCHEMA

```
REM ***************************************************************
REM *** SCHEMA FOR THE AGSO CATALOG DATABASE : OWNER = PRODUCTS ***
REM ***************************************************************


REM  Schema by R.J.Ryburn.
REM  Last modified by S.I.Ross, 27/03/1999


REM ************************************************************
REM *  CREATE ROLES FOR ADMINISTERING AGSO CATALOG AND ITS DATA *
REM ************************************************************

create role agsocat_admin;

create role agsocat_data_admin;


REM ************************************************************
REM *  LOOKUP TABLE OF AGSO SCIENTIFIC PROJECTS, LEADERS, ETC  *
REM ************************************************************

create table scientific_projects (
    projno          number (6,0)  not null,
    project_id      varchar2(16)  not null,
    web_visible     varchar2(1)   not null, /* DEFAULTS TO 'Y' */
    project_name    varchar2(64),
    project_leader  varchar2(24),
    project_manager varchar2(24),
    division        varchar2(32),
    start_date      date,
    end_date        date,
    project_desc    varchar(256),
    entrydate       date )
tablespace TBSPC storage ( initial 10k next 10k );

comment on table scientific_projects is 'SCIENTIFIC_PROJECTS is the
official authority table for all AGSO scientific projects past and
present, including their name, leader, division, end date, etc.';

grant select on scientific_projects to external;

alter table scientific_projects add constraint
pk_scienfic_projects_projno
    primary key ( projno )
using index tablespace INDXC storage ( initial 5K next 5K );

alter table scientific_projects add constraint
uk_scientific_projects_project_id
    unique ( project_id )
using index tablespace INDXC storage ( initial 5K next 5K );
```

```
rem ************************************************************
rem ** the scientific_Projects sequence and pre-insert trigger **
rem ** inserts next projno into all new project records        **
rem ************************************************************

create sequence seq_scientific_projno increment by 1 start with 1;

create trigger new_scientific_projno
before insert on scientific_projects
for each row
begin
    select seq_scientific_projno.nextval, trunc(sysdate)
        into :new.projno, :new.entrydate
        from dual;
end;
/

REM ************************************************************
REM *  CURRENT_PROJECTS AND web_PROJECTS VIEWS OF AGSO_PROJECTS  *
REM ************************************************************

create or replace view current_projects as
    select * from scientific_projects
    where trunc(sysdate) between start_date and end_date;

comment on table current_projects is 'CURRENT_PROJECTS is a view of
just the current projects in the SCIENTIFIC_PROJECTS table';

grant select on current_projects to external;

create or replace view web_projects as
    select * from scientific_projects
    where trunc(sysdate) between start_date and end_date
    and web_visible = 'Y';

comment on table web_projects is 'WEB_PROJECTS is the view of current
projects in the SCIENTIFIC_PROJECTS table that AGSO wishes the
outside world to see';

grant select on web_projects to external;


REM ****************************************************
REM *  LOOKUP TABLE OF FINANCIAL PROJECTS, LEADERS ETC  *
REM ****************************************************

create table financial_projects (
    fin_code      varchar2(5)  not null,
    fin_name    varchar2(240) not null,
    fin_leader  varchar2(120) not null,
    entrydate       date)
tablespace TBSPC storage ( initial 10k next 10k );

comment on table financial_projects is 'Current AGSO finacial project
codes, descriptions and responsible people';

grant select on financial_projects to internal;

grant select, insert, update, delete
    on financial_projects to agsocat_admin;
```

```
alter table financial_projects add constraint pk_financial_projects
    primary key ( fin_code )
using index tablespace INDXC storage ( initial 5K next 5K );


REM ****************************************************************
REM *  LOOKUP TABLE OF CATALOG TYPES - MAPS, PUBS, DATASETS ETC  *
REM ****************************************************************

create table cattypes (
    cat_type      varchar2(24) not null,
    description   varchar2(128) not null  )
tablespace TBSPC storage ( initial 5k next 5k );

comment on table cattypes is 'CATTYPES is the authority table of
level-one Catalog classifications, such as AGSO Publications,
Geological Maps, etc';

grant select on cattypes to external;

grant select, insert, update, delete on cattypes to agsocat_admin;

alter table cattypes add constraint pk_cattypes_cat_type
    primary key ( cat_type )
using index tablespace INDXC storage ( initial 5K next 5K );


REM ********************************************************************
REM *  LOOKUP TABLE OF CATALOG SUBTYPES - MAPS, PUBS, DATASETS ETC  *
REM ********************************************************************

create table catsubs (
    sub_type      varchar2(24) not null,
    cat_type      varchar2(24) not null,
    description   varchar2(128) not null )
tablespace TBSPC storage ( initial 5k next 5k );

comment on table catsubs is 'CATSUBS is an authority table of level-
two Catalog classifications, such as AGSO Record, 1:250 00 Geological
map, Scientific Paper, etc';

grant select on catsubs to external;

grant select, insert, update, delete on catsubs to agsocat_admin;

alter table catsubs add constraint pk_catsubs_sub_type
    primary key ( sub_type )
using index tablespace INDXC storage ( initial 5K next 5K );

alter table catsubs add constraint fk_catsubs_cat_type
    foreign key ( cat_type )
    references cattypes ( cat_type );
```

```
REM ************************************
REM *  web VIEW OF THE CATSUBS TABLE  *
REM ************************************

create view web_catsubs as select
    cat_type,
    sub_type,
    description
from catsubs;

grant select on web_catsubs to external;


REM ****************************************************************
REM *  LOOKUP TABLE OF SUPPLIERS -  AGSO, AMF, AUSLIG, MESA, ETC  *
REM ****************************************************************

create table catsuppliers (
    acronym      varchar2(6)  not null,
    name         varchar2(64),
    address      varchar2(64),
    telephone    varchar2(12),
    fax          varchar2(12) )
tablespace TBSPC storage ( initial 5K next 5K );

comment on table catsuppliers is 'CATSUPPLIERS is an authority table
of suppliers of items in the AGSO Catalog - such as the NSW
Department of Mineral Resources';

grant select on catsuppliers to external;

grant select, insert, update, delete
    on catsuppliers to agsocat_admin;

alter table catsuppliers add constraint pk_suppliers_acronym
    primary key ( acronym )
using index tablespace INDXC storage ( initial 5K next 5K );


REM ********************************************************
REM *  LOOKUP TABLE OF MEDIA - PAPER, FILM, FLOPPY DISC ETC  *
REM ********************************************************

create table catmedia (
    medium         varchar2(16)  not null,
    description    varchar2(64) )
tablespace TBSPC storage ( initial 5k next 5k );

comment on table catmedia is 'CATMEDIA is an authority table of media
on which AGSO Catalog items are stored and/or supplied - such as CD-
ROM, 9-track tape, lithoprint etc.';

grant select on catmedia to external;

grant select, insert, update, delete on catmedia to agsocat_admin;

alter table catmedia add constraint pk_catmedia_medium
    primary key ( medium )
using index tablespace INDXC storage ( initial 5K next 5K );
```

```
REM ****************************************************************
REM *  MAIN TABLE FOR ALL AGSO PRODUCTS, PUBLICATIONS & DATASETS   *
REM ****************************************************************

create table agsocat (
    catno         number  (6,0)  not null,
    www           varchar2(1)    not null,  /* 'Y' or 'N' */
    product       varchar2(1)    not null,  /* 'Y' or 'N' */
    publication   varchar2(1)    not null,  /* 'Y' or 'N' */
    dataset       varchar2(1)    not null,  /* 'Y' or 'N' */
    resourcex     varchar2(1)    not null,  /* 'Y' or 'N' */
    cat_type      varchar2(24)   not null,
    sub_type      varchar2(24),
    scale         number  (8,0),
    medium        varchar2(16),
    projno        varchar2(16),
    contact       varchar2(32),
    title         varchar2(500)  not null,
    pub_year      number  (4,0),
    pub_source    varchar2(128),
    volpart       varchar2(16),
    abstract      varchar2(2000),
    n_lat         number  (8,6),
    s_lat         number  (8,6),
    w_long        number  (9,6),
    e_long        number  (9,6),
    comments      varchar2(200),
    isbn          varchar2(12),
    ora_object    varchar2(32),  /* RELATED ORACLE TABLE OF VIEW */
    ora_row_id    varchar2(32),  /* ID OF ROW IN TABLE OR VIEW   */
    enteredby     varchar2(8)    not null,
    entrydate     date           not null,
    updatedby     varchar2(8),
    lastupdate    date,
    q_control_ok  varchar2(8),   /* QUALITY CONTROL SIGN-OFF */
    qc_date       date,
    division_ok   varchar2(8),   /* DIVISION SIGN-OFF */
    dv_date       date,
    metadata_ok   varchar2(8),   /* METADATA SIGN-OFF */
    md_date       date,
    salescent_ok  varchar2(8),   /* SALES CENTRE SIGN-OFF */
    released      date,          /* SALES CENTRE RELEASE DATE */
    bookscan_id   varchar2(16),
    price         number(8,2),   /* SALES CENTRE PRICE */
    sales_tax     number(8,2),   /* SALES CENTRE SALES TAX */
    available     varchar2(1)    /* SALES CENTRE AVAILABILITY Y/N */
    supplier      varchar2(6)    default 'AGSO' )
tablespace TBSPC storage ( initial 2000k next 2000k );

comment on table agsocat is 'AGSOCAT is the main data table for the
AGSO Catalog, with the catno being the primary key';

grant select on agsocat to internal;

grant select, insert, update, delete on agsocat
    to agsocat_admin;

grant select, insert, update, delete on agsocat
    to agsocat_data_admin;

alter table agsocat add constraint pk_agsocat_catno
    primary key ( catno )
using index tablespace INDXC storage ( initial 200K next 50K );
```

```
alter table agsocat add constraint fk_agsocat_cat_type
    foreign key ( cat_type )
    references cattypes ( cat_type );

alter table agsocat add constraint fk_agsocat_sub_type
    foreign key ( sub_type )
    references catsubs ( sub_type );

alter table agsocat add constraint fk_agsocat_projno
    foreign key ( projno )
    references scientific_projects ( projno );

alter table agsocat add constraint fk_agsocat_fin_code
    foreign key ( fin_code )
    references financial_projects ( fin_code );

alter table agsocat add constraint fk_agsocat_supplier_id
    foreign key ( supplier_id )
    references catsuppliers ( acronym );

alter table agsocat add constraint fk_agsocat_medium
    foreign key ( medium )
    references catmedia ( medium );

alter table agsocat add constraint uk_agsocat_bookscan_id
    unique ( bookscan_id )
using index tablespace INDXC storage ( initial 200K next 100K );

create index agsocat_product_types on agsocat (cat_type)
    tablespace INDXC storage (initial 200k next 100k );

rem ************************************************
rem ** the Agsocat sequence and pre-insert trigger  **
rem ** inserts next product number and entry date   **
rem ** into all new agsocat records                 **
rem ************************************************

rem  create sequence seq_agsocatno increment by 1 start with 1;

rem  create trigger new_catno
rem  before insert on agsocat
rem  for each row
rem  begin
rem      select seq_agsocatno.nextval, user, trunc(sysdate)
rem          into :new.catno, :new.enteredby, :new.entrydate
rem          from dual;
rem  end;
rem  /


REM ************************************************************
REM ** Agsocat pre-update trigger inserts date of last update **
REM ** Oracle user ID of person making the update             **
REM ************************************************************

create trigger agsocat_update
before update on agsocat
for each row
begin
    select trunc(sysdate), user
        into :new.lastupdate, :new.updatedby
        from dual;
end;
```

```
/


REM ************************************************************
REM ** Agsocat webflag Pre-Update Trigger ensures that the   **
REM ** webflag can only be set to 'Y' if the user has admin **
REM ** privileges or the user owns the record and the cat    **
REM ** type is 'External Publication' and the record was     **
REM ** created at least one week ago.                        **
REM ************************************************************

create or replace trigger agsocat_webflag_update
before update on PRODUCTS.AGSOCAT
for each row
when (old.www != new.www and old.enteredby = user)

declare
  junk varchar2(3) := '***';
  CURSOR roles is select role from session_roles;
  week_gone varchar2(5) := 'FALSE';

begin
  for roles_rec in roles LOOP
    if ( roles_rec.role = 'AGSOCAT_ADMIN'
      or roles_rec.role = 'AGSOCAT_DATA_ADMIN' ) then
      select 'X' into junk from dual;
      exit;
    else
      select '***' into junk from dual;
    end if;
  end loop;

  if :old.cat_type = 'External Publication' then
       if sysdate - 7 >= :old.entrydate then
         select 'TRUE' into week_gone from dual;
       end if;
  end if;

  if junk = 'X' OR week_gone = 'TRUE' then
    update agsocat
    set www = 'Y'
    where catno = :old.catno;
  else
    raise_application_error( -20601, 'Either '
                || user || ' is not a '
                ||'catalog administrator or the record '
                ||'must be created for at least one week '
                ||'before made web visible');
  end if;
end;
/


REM ************************************************************
REM *  ENTRY VIEW OF THE AGSOCAT TABLE FOR RECORD INTIIATION  *
REM ************************************************************

create view catentry as select
    catno,
    www,
    product,
    publication,
    dataset,
```

```
    resourcex,
    cat_type,
    sub_type,
    scale,
    medium,
    projno,
    fin_code,
    contact,
    title,
    pub_year,
    pub_source,
    volpart,
    abstract,
    n_lat,
    s_lat,
    w_long,
    e_long,
    comments,
    enteredby,
    entrydate,
    updatedby,
    lastupdate,
    metadata_ok
from agsocat
where enteredby    = user
and   metadata_ok is null;

comment on table catentry is 'CATENTRY is a data-entry view of the
AGSOCAT table. It allows all internal users to enter, update and
delete some columns in their own records in the AGSOCAT table.';

grant select, insert, update, delete on catentry to internal;


REM ********************************************
REM *  web PRODUCTS VIEW OF THE AGSOCAT TABLE  *
REM ********************************************

create view web_cat_prods as select
    catno,
    cat_type,
    sub_type,
    scale,
    medium,
    projno,
    contact,
    title,
    pub_year,
    pub_source,
    volpart,
    abstract,
    n_lat,
    s_lat,
    w_long,
    e_long,
    comments,
    isbn,
    released,
    price,
    sales_tax,
    available,
    supplier
from agsocat
```

```
where www = 'Y'
and   product = 'Y';

comment on table web_cat_prods is 'WEB_CAT_PRODS is the products view
of the AGSOCAT table seen by the outside world.  The products and www
columns must be set to Y';

grant select on web_cat_prods to external;


REM ************************************************
REM *  web PUBLICATIONS VIEW OF THE AGSOCAT TABLE  *
REM ************************************************

create or replace view web_cat_pubs as select
    catno,
    cat_type,
    sub_type,
    scale,
    medium,
    projno,
    contact,
    title,
    pub_year,
    pub_source,
    volpart,
    abstract,
    n_lat,
    s_lat,
    w_long,
    e_long,
    comments,
    isbn,
    released,
    price,
    sales_tax
from agsocat
where www = 'Y'
and   publication = 'Y';

comment on table web_cat_pubs is 'WEB_CAT_PUBS is the publications
view of the AGSOCAT table seen by the outside world.  The
publications and www columns must be set to Y';

grant select on web_cat_prods to external;


REM ****************************************************
REM *  THE AUTHORS TABLE LINKING TO THE AGSOCAT TABLE  *
REM ****************************************************

create table catauthors (
    catno         number  (6,0) not null,
    author        varchar2(36)  not null,
    sequenceno    number  (2,0) not null  )
tablespace TBSPC storage ( initial 500k next 500k );

comment on table catauthors is 'CATAUTHORS is the table for all
authors attached to AGSO Catalog records. It also preserves author
sequence';

grant select on catauthors to external;
```

```
grant select, insert, update, delete on catauthors to internal;

alter table catauthors add constraint pk_catauthors
    primary key (catno, sequenceno)
using index tablespace INDXC storage ( initial 200K next 100K );

alter table catauthors add constraint fk_authors_catno
    foreign key ( catno )
    references agsocat ( catno );


REM ************************************************************
REM *  TABLE CATSPATIALS HAS SPATIAL POINTS, LINES AND POLYGONS  *
REM ************************************************************

create table catspatials (
    cs_no         number  (7,0) not null,
    catno         number  (7,0) not null,
    cs_type       varchar2(1)   not null )
tablespace TBSPC storage ( initial 50K next 50K );

comment on table catspatials is 'CATSPATIALS is a table for attaching
spatial metadata points, lines and polygons to a row in the AGSOCAT
table';

grant select on catspatials to external;

grant select, insert, update, delete on catspatials to internal;

alter table catspatials add constraint pk_catspatials_cs_no
    primary key ( cs_no )
using index tablespace INDXC storage ( initial 100K next 100K );

create index catspatials_catno on catspatials (catno)
    tablespace INDXC storage (initial 50k next 50k );

alter table catspatials add constraint fk_catspatials_catno
    foreign key ( catno )
    references agsocat ( catno );

alter table catspatials add constraint ck_catspatials_cs_type
    check ( cs_type in ('P', 'L', 'X') );


rem ******************************************
rem ** The catspatials pre-insert trigger     **
rem ** inserts the next primary key (cs_no)   **
rem ** value into all new catspatials records **
rem ******************************************

create sequence seq_catspatials_no increment by 1 start with 1;

create trigger new_catspatials_no
before insert on catspatials
for each row
begin
    select seq_catspatials_no.nextval
        into :new.cs_no
        from dual;
end;
/

REM ********************************************************
```

```
REM *  TABLE OF LAT/LONGS FOR POINTS, LINES AND POLYGONS  *
REM ******************************************************

create table catpoints (
    cp_no         number  (8,0) not null,
    cs_no         number  (7,0) not null,
    dlat          number  (8,6) not null,
    dlong         number  (9,6) not null  )
tablespace TBSPC storage ( initial 200K next 100K );

comment on table catpoints is 'CATPOINTS is a table for storing the
latitude and longitude of points and the nodes along lines and
polygons. Links to the CATSPATIALS table. Assume the GDA94 datum.';

grant select on catpoints to external;

grant select, insert, update, delete on catpoints to internal;

alter table catpoints add constraint pk_catpoints_cp_no
    primary key ( cp_no )
using index tablespace INDXC storage ( initial 50K next 50K );

alter table catpoints add constraint fk_catpoints_cs_no
    foreign key ( cs_no )
    references catspatials ( cs_no );

create index catpoints_cs_no on catpoints (cs_no)
    tablespace INDXC storage (initial 50k next 50k );

rem ****************************************
rem ** The catpoints pre-insert trigger     **
rem ** inserts the next primary key (cp_no) **
rem ** value into all new catpoints records **
rem ****************************************

create sequence seq_catpoints_no increment by 1 start with 1;

create trigger new_catpoints_no
before insert on catpoints
for each row
begin
    select seq_catpoints_no.nextval
        into :new.cp_no
        from dual;
end;
/


REM *******************************
REM *  LOOKUP TABLE OF FILE TYPES *
REM *******************************

create table filetypes (
    filetype      varchar2(16) not null,
    comments      varchar2(128) )
tablespace TBSPC storage ( initial 5K next 5K );

comment on table filetypes is 'FILETYPES is an authority table of
computer file types that may be attached to the AGSO Cataolg - such
as ASCII, DOC, PDF, GIF, JPEG';

grant select on filetypes to external;
```

```
grant select, insert, update, delete on filetypes to agsocat_admin;

alter table filetypes add constraint pk_filetypes_filetype
    primary key ( filetype )
using index tablespace INDXC storage ( initial 5K next 5K );


REM ************************************
REM *  LOOKUP TABLE OF CATALOG THEMES  *
REM ************************************

create table themes (
    theme          varchar2(24) not null,
    comments       varchar2(128) )
tablespace TBSPC storage ( initial 5K next 5K );

comment on table themes is 'THEMES is an authority table of theme
words - e.g. geology, topography - used in the AGSO Catalog';

grant select on themes to external;

grant select, insert, update, delete on themes to agsocat_admin;

alter table themes add constraint pk_themes_theme
    primary key ( theme )
using index tablespace INDXC storage ( initial 5K next 5K );


REM ****************************************
REM *  TABLE RELATING THEMES TO THE CATALOG  *
REM ****************************************

create table catthemes (
    catno          number  (6,0) not null,
    theme          varchar2(24)  not null  )
tablespace TBSPC storage ( initial 200K next 200K );

comment on table catthemes is 'CATTHEMES is a table that links
multiple theme words to rows in the AGSO Catalog AGSOCAT table';

grant select on catthemes to external;

grant select, insert, update, delete on catthemes to internal;

alter table catthemes add constraint pk_catthemes_catno_theme
    primary key ( catno, theme )
using index tablespace INDXC storage ( initial 20K next 20K );

alter table catthemes add constraint fk_catthemes_catno
    foreign key ( catno )
    references agsocat ( catno );

alter table catthemes add constraint fk_catthemes_theme
    foreign key ( theme )
    references themes ( theme );
```

```
REM ************************************************
REM *  TABLE OF FILES ASSOCIATED WITH THE CATALOGUE  *
REM ************************************************

create table catfiles (
    fileno       number  (7,0)  not null,
    catno        number  (6,0)  not null,
    medium       varchar2(16),
    pathname     varchar2(64),
    filetype     varchar2(16),
    theme        varchar2(24),
    comments     varchar2(128) )
tablespace TBSPC storage ( initial 100K next 100K );

comment on table catfiles is 'CATFILES is a table that links multiple
computer files to rows in the AGSO Catalog AGSOCAT table';

grant select on catfiles to external;

grant select, insert, update on catfiles to internal;

alter table catfiles add constraint pk_catfiles_fileno
    primary key ( fileno )
using index tablespace INDXC storage ( initial 20K next 20K );

alter table catfiles add constraint fk_catfiles_catno
    foreign key ( catno )
    references agsocat ( catno );

alter table catfiles add constraint fk_catfiles_filetype
    foreign key ( filetype )
    references filetypes ( filetype );

alter table catfiles add constraint fk_catfiles_medium
    foreign key ( medium )
    references catmedia ( medium );

alter table catfiles add constraint fk_catfiles_theme
    foreign key ( theme )
    references themes ( theme );

create index catfiles_catno on catfiles (catno)
    tablespace INDXC storage (initial 20k next 20k );


rem ****************************************
rem ** The catfiles pre-insert trigger    **
rem ** inserts the next primary key (fileno) **
rem ** value into all new catfiles records  **
rem ****************************************

create sequence seq_catfile_no increment by 1 start with 1;

create trigger new_catfile_no
before insert on catfiles
for each row
begin
    select seq_catfile_no.nextval
        into :new.fileno
        from dual;
end;
/
```

```
REM ************************************************************
REM *  TABLE CATIMAGES STORES CATALOG IMAGES FOR web DISPLAY  *
REM ************************************************************

create table catimages (
    image_no      number  (7,0) not null,
    catno         number  (7,0) not null,
    caption       varchar2(128),
    comments      varchar2(512),
    image         long raw )
tablespace TBSPC storage ( initial 1000K next 1000K );

comment on table catimages is 'CATIMAGES is a table that links images
- GIF and JPEG - to rows in the AGSO Catalog AGSOCAT table';

grant select on catimages to external;

grant select, insert, update on catimages to internal;

alter table catimages add constraint pk_catimages_image_no
    primary key ( image_no )
using index tablespace INDXC storage ( initial 20K next 20K );

alter table catimages add constraint fk_catimages_catno
    foreign key ( catno )
    references agsocat ( catno );

create index catimages_catno on catimages (catno)
    tablespace INDXC storage (initial 20k next 20k );

rem ********************************************
rem ** The catimages pre-insert trigger       **
rem ** inserts the next primary key (image_no) **
rem ** value into all new catimages records   **
rem ********************************************

create sequence seq_catimages_no increment by 1 start with 1;

create trigger new_catimages_no
before insert on catimages
for each row
begin
    select seq_catimages_no.nextval
        into :new.image_no
        from dual;
end;
/


REM ************************************************************
REM *  TABLE CATDOCS STORES PDF DOCUMENTS FOR web DISPLAY  *
REM ************************************************************

create table catdocs (
    doc_no        number  (7,0) not null,
    catno         number  (7,0) not null,
    comments      varchar2(512),
    PDF_file      long raw,
    pathname      varchar2(128) )
tablespace TBSPC storage ( initial 1000K next 1000K );

comment on table catdocs is 'CATDOCS is a table that links PDF
document files to rows in the AGSO Catalog AGSOCAT table';
```

```
grant select on catdocs to external;

grant select, insert, update on catdocs to internal;

alter table catdocs add constraint pk_catdocs_doc_no
    primary key ( doc_no )
using index tablespace INDXC storage ( initial 20K next 20K );

alter table catdocs add constraint fk_catdocs_catno
    foreign key ( catno )
    references agsocat ( catno );

create index catdocs_docno on catdocs (catno)
    tablespace INDXC storage (initial 20k next 20k );

rem ****************************************
rem ** The catdocs pre-insert trigger      **
rem ** inserts the next primary key (doc_no) **
rem ** value into all new catdocs records  **
rem ****************************************

create sequence seq_catdocs_no increment by 1 start with 1;

create trigger new_catdocs_no
before insert on catdocs
for each row
begin
    select seq_catdocs_no.nextval
        into :new.doc_no
        from dual;
end;
/


REM ************************************************
REM *  TABLE CATURLS STORES CATALOG-LINKED web URLS  *
REM ************************************************

create table caturls (
    catno        number  (6,0)  not null,
    url          varchar2(100)  not null,
    comments     varchar2(100) )
tablespace TBSPC storage ( initial 100K next 100K );

comment on table caturls is 'CATURLS is a table that links multiple
web URL addresses to rows in the AGSO Catalog AGSOCAT table';

grant select on caturls to external;

grant select, insert, update on caturls to internal;

alter table caturls add constraint pk_caturls_catno_url
    primary key ( catno, url )
using index tablespace INDXC storage ( initial 20K next 20K );

alter table caturls add constraint fk_caturls_catno
    foreign key ( catno )
    references agsocat ( catno );
```

APPENDIX B - PUBLICATION APPROVAL FORM

AGSO Internal/External Publication Approval

1. AGSO Catalog Data

Catalog No. 31603 Type : External Publication Subtype : Abstract

Title Near vertical and wide-angle reflection and refraction seismic studies on the Australian North West Shelf: towards a unified approach

Authors :Goncharov, A., Petkovic, P., Fomin, T. and Pylypenko, V.

Source : 9th Int Symp. 'Deep Seismic Profiling of the Continents and their Margins", Abstracts

N Lat : -10	S Lat : -21	W Long : 111	E Long : 130

2. Peer review approval *(if required)*

Name:	Date recv'd:	Date passed on:	Initials:	Remarks:

3. Corporate data systems information

☐ Data entered on corporate database(s)? Database Name(s):

4. Sale price / Project activity codes

4(a)	$ ..... (to be determined by Sales Centre)	4(b)	Cost charged to code:	S35 revenue from sales to: .....

5. Security classification

Please note: The information to be published may include material that is either commercial-in-confidence or subject to the provisions of the Privacy Act. Please ensure that both this form and the publication are, marked appropriately.

(A) **Unclassified:** ☐ General (<$99) Limited: ☐ Category 1 ($100-$499) ☐ Category 2 (>$500) ☐ Internal AGSO Use (not for sale)

(B) **Classified:** ☐ Commercial-in-Confidence Release date: .....

Classified details, with date of release, must appear clearly on cover and title page of publication

6. Approval to publish and distribute

Project Leader: ..... Project: .....

Division Chief: ..... Division: .....

7. Publication Details

7(a)				
	☐ Record	Record No:	ISBN:	ISSN : 1039-0073
	☐ Bulletin	Bulletin:	ISBN:	ISSN: 1039-2645
	☐ Map	☐ Monograph	ISBN:	
	☐ Other		ISBN:	
	(Client Services to provide publication & ISBN numbers)			
7(b)	☐ Dataset	☐ Digital Data / disk(s) enclosed ?	No. of disk(s):	

AGSO Internal Publication Procedures

8.	Publication print run		
8(a) Official AGSO distribution:			
	Record:	Bulletin:	Map:
Corporate - Library, Open File Centres, Executive - *(Client Services to provide numbers)*			
Ministerial Release	1	1	1
Initial Sales Stock	10	10	5
8(b) Program Distribution			
Author / Project			
Additional Sales Stock (Author to consult with Sales Centre Manager to provide numbers)			
8(c) Total Production run			

9.	Publishing requirement		
Please note: Manuscript must be provided in digital form with a hard copy.			
☐ Quote required			
☐ Printing	☐ Collating	☐ Pages *(number, including reverse title)*	
☐ Copying	☐ Special Record Cover	☐ Figures *(number)*	
☐ Typesetting	☐ Other	☐ Plates *(number)*	☐ Colour Plates *(number)*

10.	PUBLICATIONS PRODUCTION USE ONLY	
IMB Technical Services:		
	Received by	Date:
	☐ Printed	Date:
	Printed by:	Cost: $
Sales Centre:	☐ Ministerial approval received	
	☐ Distributed	Date:

11.	PUBLISHING PROCEDURE CHECKLIST
1.	Author to complete Sections 2, 3, 4(b), 5, 7(b), 8(b), 9.
2.	Project Leader and Chief of Division sign Section 6.
3.	Forward form to Manager, Client Services (Anne Franklin)
4.	Client Services allocate publishing and ISBN numbers.
5.	Technical Services, IMB to arrange printing.
6.	Sales Centre to arrange official AGSO distribution - *(Legal deposit, Library and Open File Centres)* - after quality checks and ministerial release approval.
7.	Author to arrange distribution of divisional / project / author copies.

APPENDIX C - DATASET APPROVAL FORM

Dataset Release Approval Form

To be compeleted by Divisional Data Administrator

AGSO Catalog Data			
Catalog No. 21913	**Type :** GIS Dataset	**Subtype :** Regional Geoscience	
Title : Pine Creek Metallogenic GIS package 1:500 000 scale (version 1.2)			
Authors : Wyborn, L.A.I., Ratajkoski, M. and Thost, D.			
Source :			
N Lat : -11.5	**S Lat :** -14.5	**W Long :** 130	**E Long :** 134

Project Name :	
Description of Project :	
Project Leader:	Division:
Project Data Officer:	Date:
Checked by(*Divisional Data Administrator*):	Tel. No. (DBA)

Data Description	
Media	❑ CD-ROM ❑ DISK ❑ TAPE ❑ OTHER *(specify)* Refer AGSO standards and procedures on intranet for CD-ROM production
Target software system(s)	
Format(s) of the data *eg. ARC export, double precision, uncompressed*	

Adminstration checks	
❑ Price of data is defined	If data includes data from another source then : ❑ Licensing and copyright issues are agreed upon

Format checks	
❑ Data is supplied in all required release formats	❑ Data can be downloaded, imported and viewed into the target software system
❑ Names of files, layers or covers are valid	❑ Data precision and compression are valid

Completeness checks	
❑ Metadata is supplied	❑ Data is attributed
❑ Project level data validation has been carried out	❑ Associated files and tables, such as look up tables, are included
If "Plot on Demand" then ❑ Plot File(s) are included	*If ARC/VIEW, are the required legends and plattes present?* *If ARC/INFO, are required symbol sets present?*

Quality checks
❑ Metadata is correct

Release data	
❑ Yes : If "Yes" then the **Project Manager** should now : *Obtain Divisional Chief approval for release of product* *Notify the **Minister** of the release of the product* *Notify the **Sales Centre** staff of the release of the product* *Advertise the release of the product in **AUS.GEO News***	❑ No : If "No" then the necessary corrections are:

APPENDIX D - A COMPREHENSIVE REPORT

Comprehensive AGSO Catalog Report

Cat # : 21949 Flags **Product :** Y **Publication :** N **Dataset :** Y **Resource :** N **WWW :** Y

Title : Mount Isa Inlier and Environs 1:500 000 GIS package (version 1.2)

Medium : Compact Disc Read-Only Memory **Scale :** 500000 **Contact :** Wijatkowska-Asfaw, Barbara

Type : GIS Dataset **Sub Type :** Regional Geoscience **Project Id :** 211

Pub'n Source : **Pub'n Year :** 1995 **Vol / Part :** **ISBN :**

Abstract : The GIS is based on the "Mount Isa Inlier and Environs" 1:500 000 scale map (published in 1987), which was digitised and verified against geochemical and mineral deposit point data. A series of interpretative geological and geochemical coverages were derived from these map data and point datasets such as ROCKCHEM, OZCHRON, and MINERAL DEPOSITS. Geophysical byte images provide broad regional views showing the c

Bounding Rectangle

N Latitude : -17.5 **S Latitude :** -22 **W Longitude :** 137.5 **E Longitude :** 141

Pricing Information

Price : $ 500 **Sales Tax : $** 0 **Supplier :** AGSO **Available** Y

Comments : Arcinfo/Arcview and Mapinfo formats (previous version 1.0)

List of Authors

Name :

1 Wyborn, L.A.I.

Attached Files

Description : **Path :** **File Type :**

Attached Document

Comments : **Path :**

Attached Images

Caption :

Image showing extent of dataset.

Snapshot of usage of selected GIS datasets for data integration.

Themes

Theme :

geology

metamorphism

structural geology

geochemistry

geophysics

Furthur Links

URL :

http://www.agso.gov.au/minerals/mt_isa_500.html