



GEOSCIENCE DATABASES WITHIN GSWA

As a result of several recent new mapping initiatives there has been a large growth in the amount of data collected and stored in digital form within GSWA. Consequently, GSWA has embarked on the development of a series of technical databases to hold its entire range of geoscientific data. GSWA strategy is to design and implement several databases within the context of an overall corporate logical data model using the Oracle 7 RDBMS. A Microsoft Access application provides the geoscientists with a user-friendly interface to the Oracle databases through ODBC and SQL*NET. This strategy is being carefully co-ordinated to achieve a combination of databases that are well integrated and can be shared.

Proper use of the data residing in the database structure is essential to the operations of GSWA. Appointment of a Geoscience Database Coordinator is an indication of GSWA's commitment to the management of the data resource within the database structure. The Geoscience Database Coordinator is the custodian of GSWA's total data resource, and as such is responsible for a wide range of functions such as database planning, design, implementation, maintenance, protection, education, training, and support of the end-users.

All data collected as part of GSWA projects (geochemistry, mineralogy, field site data and so forth) will be entered into the corporate databases. To achieve this GSWA has decided not to develop highly structured site data-entry forms for use in the field but to retain the traditional field note book. However, geoscientists have agreed on a method of collecting the data in a more structured way so that transference of the data to the corporate databases is easily achieved.

The data model for GSWA's corporate database comprises two main sub-systems, the Geological Field Databases and the Laboratory Databases. GSWA's corporate data model has been based on that developed by the Australian Geological Survey Organisation (AGSO). However, significant modifications to both the authority and main data tables have taken place to better serve the requirements of GSWA. The structure of the database has been designed to allow easy integration of the data held in the database with any other GSWA corporate data through the use of a Geographic Information System (GIS).

WAROX, part of the Geological Field Database, is at the heart of GSWA's corporate field and laboratory geological database system. It records what a geoscientist normally writes in his/her field notebook, but in a structured way that allows for advanced methods of data manipulation and presentation. As such it can be linked with a GIS. Some databases within the corporate schema relate directly to WAROX through the SITES table. Other databases relate to WAROX through the ROCKS table that contains sample information.

WAMIN, the mineral occurrences database, holds data related to mineral deposits and mineral occurrences. As such it has been compiled from published and unpublished references and other material collected and collated by GSWA, including MINEDEX, WAMEX, DME's Mineral Exploration Index of open-file company reports, and OZMIN, AGSO's mineral deposits database. ►

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◀ GSWA has also developed a standard approach to the classifications and terminologies used by its geoscientists. This has resulted in the development of a number of authorities, or look-up tables for each of the corporate databases. As such they contain the only acceptable and valid terms for use within GSWA's corporate databases and ensure that the data attributes meet clearly defined criteria and fall within an acceptable range of values.

Other databases are currently being developed as part of the corporate schema. □

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ADDITIONAL FUNDING FOR GEOSCIENCE MAPPING AND EXPLORATION INFORMATION INITIATIVES

The Geological Survey of Western Australia will receive an additional \$5 million per annum over the next four years to allow for further acceleration of the mapping program in the Goldfields and the Midwest/Gascoyne regions. This funding will also create the opportunity to enter a new phase in the collection and release of geoscientific data in establishing what will become known as "terrane custodianship" programs.

Geological, geophysical, geochemical, and mineral occurrences information will be collected in comprehensive spatial (GIS) databases, resulting in the continual updating and release of seamless maps on demand. The client can then select an area, at a specific scale, and receive either a digital or hardcopy product.

The process will enable GSWA to liaise more closely with industry and capture and integrate without delay all regionally relevant information generated by industry and other sources. Currently much of the captured information is delayed or even lost.

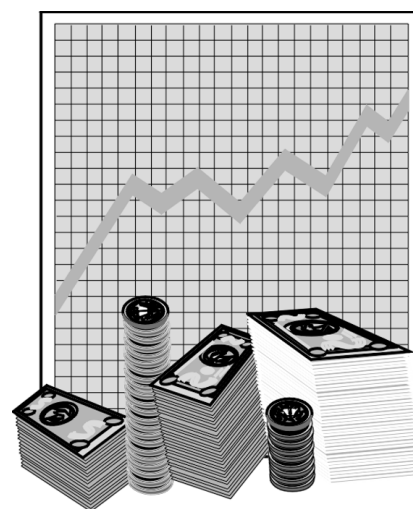
In addition, the new funding will allow for a resurgence of regolith geochemical mapping and commencement of an urban geological mapping program. The latter will aid development and planning and assist with the resolution of conflicting landuses in the Southwest, Midwest/Gascoyne, and Western Pilbara regions. This mapping will also highlight possible geohazards and the availability of raw materials for the construction and other industries.

The Budget increase will also allow a review and initial upgrade of the process for the handling and re-release to industry of petroleum (WAPEx) and minerals (WAMEX) exploration reports. These reports represent the collective results of an investment of more than \$16 billion by explorers operating in Western Australia since the 1950s. This resource has been critical to the exploration industry in generating new and successful exploration concepts.

Funds will also be allocated to ensure the widest availability of airborne geophysical data along the

high-potential but underexplored eastern and southern margins of the Goldfields, the Midwest and other areas of the State. This will be achieved by direct acquisition of exclusive or joint copyright and by supporting multi-client surveys.

Industry involvement in the planning process will ensure that GSWA undertakes this significant phase of expansion with an understanding of their needs and priorities. □



SECRETS OF THE CANNING BASIN REVEALED

Record 1996/10 — “A compilation and review of data pertaining to the hydrocarbon prospectivity of the Canning Basin” by S.N. Apak and G.M. Carlsen provides an opportunity to become familiar with an underexplored basin that is prospective for hydrocarbons.

This publication, the first in a series dealing with the Canning Basin, aims to collate all available data, evaluate the quality and extent of open-file data, interpret all previously published relevant reports, and recommend additional analyses of existing data. It also specifies the scope of new data to be gathered, and reports on the significant progress already achieved. Emphasis is on the Permo-Carboniferous, which reflects the importance of reservoirs of this age in various parts of the Canning Basin. This emphasis complements work previously completed by the Australian Geological Survey Organisation (AGSO).

This publication achieves the objective of an initial compilation and review of data pertaining to the hydrocarbon prospectivity of the Canning Basin. An extensive data search has been completed and contacts with other Government departments and exploration companies have ensured that all relevant public-domain data are readily available. The completed investigations reported in this publication provide an understanding of the petroleum systems of the Canning Basin and will allow more accurate planning for further studies.

Two hundred and forty-nine wells have been drilled in the Canning Basin since the early 1920s resulting in hydrocarbon discoveries on the Lennard Shelf, some of which are of commercial significance. Oil has been found in Famennian reefs, Permo-Carboniferous clastic reservoirs, and the Upper

Carboniferous Yellow Drum Formation. Cumulative gross oil production in the basin reached 379 530 kL at the end of 1995.

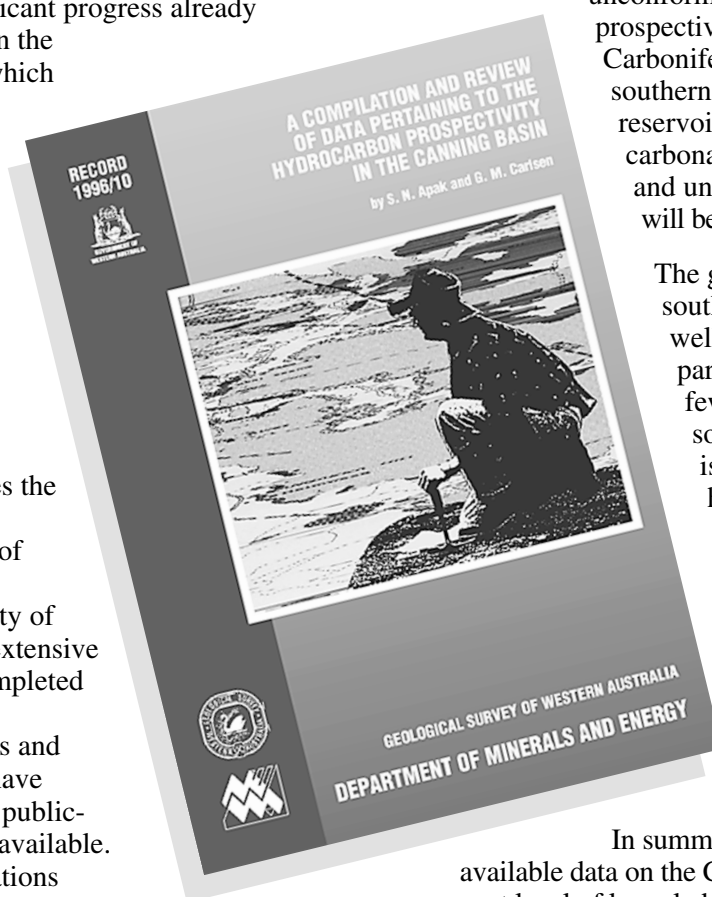
Further studies will focus on detailed subcrop mapping of the pre-Poole Sandstone and pre-Grant Group unconformity in order to establish prospective trends within the Permo-Carboniferous sequences of the southern Canning Basin. In addition, reservoir trends in both clastic and carbonate deposits will be mapped and unconformity pinch-out traps will be evaluated on a regional scale.

The geological history of the southern part of the basin is less well known than the northern part. Fewer seismic data and fewer wells are available in the southern part of the basin. There is sufficient information, however, for structural, stratigraphic, petrophysical, and geochemical studies to reach significant conclusions with regard to hydrocarbon prospectivity in that part of the basin. All available data will be interpreted to reconstruct the geological history of the area.

In summary, this study documents the available data on the Canning Basin, assesses the current level of knowledge with respect to hydrocarbon exploration within the basin, and defines work yet to be done. □

Copies of Record 1996/10 are priced at \$20.00 and are available from the Information Centre, first floor, Mineral House, 100 Plain Street, East Perth or by telephoning (08) 9222 3459.

Copies of the data in digital format can be obtained by telephoning (08) 9222 3322.



OPERATION DESERT STORM

Even though rain closed roads and flooded campsites, the Geological Survey of Western Australia's geochemical mapping exercise, **Operation Desert Storm**, covered an area of 32 000 square kilometres east of Carnarvon. The objective of the exercise was to collect more than 2000 regolith samples to produce two new 1:250 000 map sheets and information on the regolith composition of the area.

The use of two helicopters to move sampling teams of geologists and field assistants meant it took only 14 days to collect all samples for the first map sheet and 12 days for the other. A team of 24 was involved in the project, which included pilots and engineers.

Project Manager for Regional Regolith and Geochemical Mapping, Dr Paul Morris, said it was the first time GSWA had used helicopters on such a scale. He said that most companies could not justify regional sampling on this scale as it would be uneconomical and infringe on competitors' ground.



Location, location, location.

Dr Morris said the Geological Survey's work in this respect filled an important niche between university research and the exploration work of companies by broadly identifying new areas of prospectivity irrespective of current mineral tenement patterns.

Regolith sampling projects are usually carried out by vehicle, but in this case the difficult terrain and tight deadlines made the project more suitable for the use of helicopters. The helicopters were required to fly about eight hours a day ferrying six two-person sampling crews. Approximately 1800 litres of fuel were used each day.

Poor weather at the start of the project created havoc with fuel supplies for the helicopters. Roads were cut because of heavy rain and drums of fuel could not be positioned by ground vehicles as planned. This meant that some helicopter time was used to distribute fuel rather than for sampling.

However, despite the conditions, the people on the trip did an excellent job and the helicopter outfit was very professional in keeping everything moving.



One of the many refuelling stops required during the exercise.

The geochemical mapping and sampling project is part of the New Initiatives Program, and was started in 1994 to produce regolith maps and examine regolith chemistry of Western Australia. This program aims to encourage exploration efforts in greenfields areas by looking at the chemistry of regolith on a regional scale to identify prospective areas. A combination of Landsat images, aerial photographs, geophysics, site information, and regolith chemistry is used to identify areas of mineralization.

Operation Desert Storm has been such a success that the exercise will be repeated with the code-name Winter Tempest. Two more 1:250 000 map sheets will be completed in this next phase starting with Turee Creek, north of Mount Egerton, and later, Edmund, west of Turee Creek. □

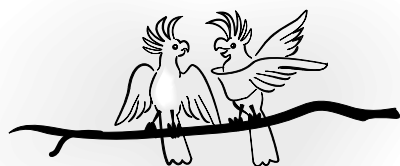


A local pops in for breakfast



Peter Boner chats with a mate.

MINILYA	WINNING POOL	EDMUND	TUREE CREEK	NEWMAN
QUOBBA	KENNEDY RANGE	MOUNT PHILLIPS	MOUNT EGERTON	COLLIER
SHARK BAY	WOORAMEL	GLENBURGH	ROBINSON RANGE	PEAK HILL
EDEL	YARINGA	The two 1:250 000 map sheets covered during exercise Desert Storm		



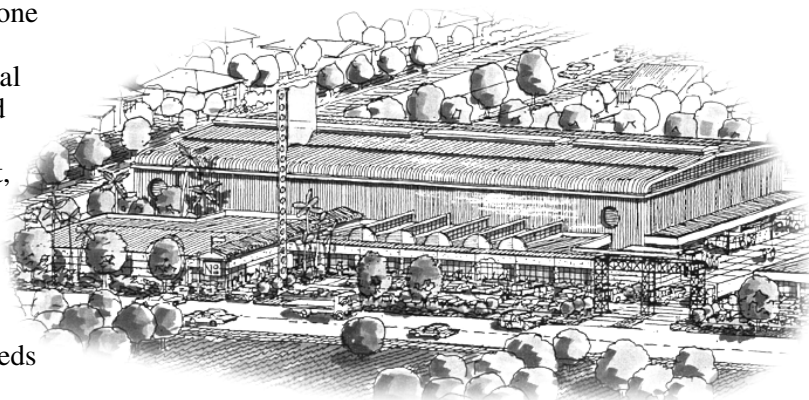
Bush Telegraph

DRILL CORE STORAGE FACILITIES

Plans are under way for the construction of drill core storage facilities in Kalgoorlie, Perth and one or more selected country centres. A review of priorities, based on industry consultations, initial planning and a feasibility study, has established that the construction of a central Perth facility should be given the highest priority. As a result, the current plan is to begin work in 1997/98 on the Kalgoorlie and Perth facilities.

In 1998/99, once again in consultation with industry, a review and feasibility study will be conducted to focus on addressing industry's needs throughout the remainder of the State.

The Kalgoorlie Drill Core Library will incorporate a new operational base for the Geological Survey of Western Australia. □



Concept sketch of the Perth facility

Out with the old, in with the new

WAMEX and WAPEX merger

Early in June, after months of planning, consultation and meetings, the two groups charged with managing the mineral and petroleum exploration data moved, as a single unit, into refurbished premises on the 5th floor of Mineral House. Location of the new offices is adjacent to the library, presenting a consolidated geoscience information service aimed at improving customer service.

The merger of the WAMEX and WAPEX groups is more than just a physical relocation of staff. The original two sections are now managed as a single unit by newly appointed manager Margaret Ellis. Plans for staff training have been put in place that will provide the support required across both sections.

Geological Survey Division Director Dr Pietro Guj said that it was important to unite all of the people who deal with information because it allowed greater flexibility. Hopefully, this would translate into increased multiskilling and, hence, greater effectiveness in serving industry, without increased costs.

"The merger of the two groups was initiated by the need to exploit some similarities in the process and related economies of scale, yet still recognize some unique elements of the two processes, which are vastly different for minerals and petroleum" he said.

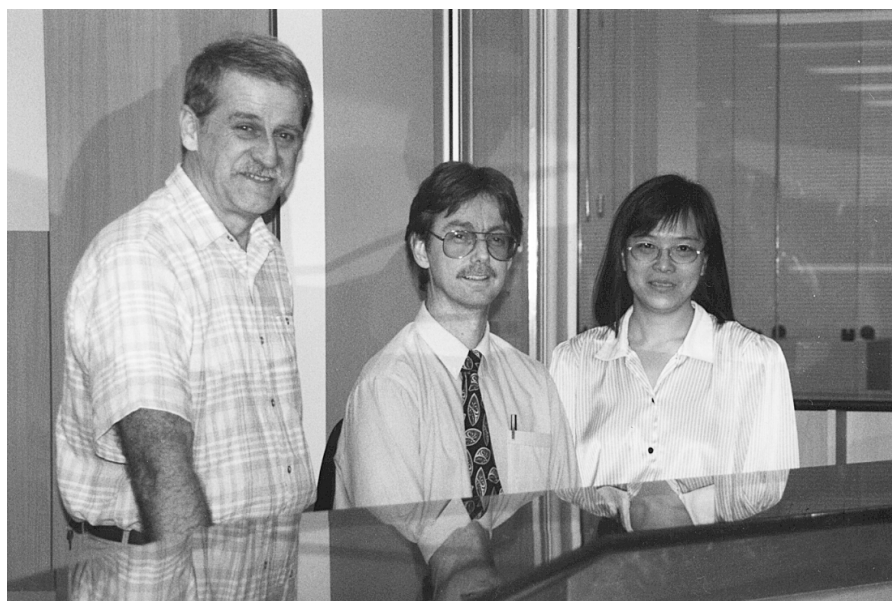
"The final stage will be to persuade Cabinet to resource the geoscience information services with new

technology that will take them into the 21st century. To achieve this, an allocation of \$200 000 has already been made in the 1997/98 budget for an initial study to determine what direction should be taken, particularly in the areas of receipt, storage and curation of digital information, and the best way to release that information to industry".

Effective and efficient management of the data in the Department's custodianship is vital as the collections now stand at over 56 000 mineral reports and about 532 000 registered sets of petroleum data, collectively representing an investment of over \$16 billion in exploration in Western Australia over the last three decades. □

Library

The renovation of the library has at last been completed and customers who have had to endure dust and noise for the past three months are now making use of the new and much more functional Library and Exploration Information facility. The changes have seen all of the GSWA information services come together on the one floor to provide customers with a central point for all their exploration information needs. After living with the old floor plan for the past ten years, Library staff were able to design a new layout which provides more space and improved functionality.



Our friendly library staff — Robert Cross, Brian Knyn and Eunice Cheung



Increased floor area for public and staff.

The changes can be seen immediately on entry to the floor. A new foyer combines a large, open reception area with comfortable seating in the waiting room, and a dynamic display of some of the latest GSWA publications. In the Library proper the first impression is one of light and space. The floor area devoted to the public and library staff has increased with the use of an open-plan design and a more functional layout of furniture and equipment.

These improved facilities, we believe, provide a more functional, efficient, comfortable and user-friendly library environment. So for all your geoscientific needs why not visit the “new” GSWA Geoscience Information Library. □



Light and space

All customer enquiries may now be directed to the Library enquiries desk - telephone (08)9222 3657.



SOME RECENT PUBLICATIONS

Regolith Geochemistry

Geochemical mapping of the **ROBINSON RANGE** 1:250 000 sheet
by J.J. Bradley, J.A. Faulkner and A.J. Sanders

Geochemical mapping of the **MOUNT PHILLIPS** 1:250 000 sheet
by A.J. Sanders, P.A. Morris, A.G. Subramanya and J.A. Faulkner

Geochemical mapping of the **NABBERU** 1:250 000 sheet
by P.A. Morris, A.J. Sanders and J.A. Faulkner

each \$100.00*

*Price includes Explanatory Notes, selected plates and a disk containing digital sample data
Individual maps available at 1:250 000 scale including:

1. Regolith materials map \$20.00
 2. Company surface geochemistry projects
 3. Sample locations
 4. Element-distribution and other maps including major and trace elements each \$10.00
- Also available in GIS format (ARCINFO/ARCVIEW)

Primary dataset (Regolith materials, sample data and locations, geological and geomorphological attributes, mineral exploration tenement data) \$100.00

Additional themes By negotiation

Barite and fluorite in Western Australia

MINERAL RESOURCES BULLETIN 17 by P.B. Abeyasinghe \$40.00

Groundwater: The Strategic Resource - A geological perspective of groundwater occurrence and importance in Western Australia

REPORT 50 by A.D. Allen \$35.00

A compilation and review of data pertaining to the hydrocarbon prospectivity of the Canning Basin

RECORD 1996/10 by S. N. Apak and G.M. Carlsen \$20.00

Permo-Carboniferous petroleum reservoir data, selected wells, Canning Basin, Western Australia

RECORD 1996/11 by P.J. Havord, S.N. Apak and G.M. Carlsen \$40.00

Geology and geochemistry of granitoid rocks in the southwest Eastern Goldfields Province

REPORT 49 by W.K. Witt and R. Davy \$40.00

1:100 000 GEOLOGICAL SERIES MAPS

East Kimberley: **BOW** (4564) **MCINTOSH** (4462) **TURKEY CREEK** (4563)
North Pilbara: **DAMPIER** (2256) **SHERLOCK** (2456)
Glengarry Region: **MOOLOOGOO** (2745) **MILGUN** (2547) **THADUNA** (2846)
PADBURY (2546) **WILUNA** (2944)

Maps each \$10.00