EXIS - A COMPUTER NETWORK FOR PROVIDING UP-TO DATE HEALTH & SAFETY INFORMATION TO THE WA MINING INDUSTRY

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SUMMARY

The Department of Minerals and Energy (DME) is committed to ensuring that Western Australia has the world's best exploration, development and operating regime for mineral projects. The continual improvement of the distribution and understanding of current safety information is essential in achieving this goal.

DME's Mining Operations Division (MOD) has developed a system to improve access to up-to-date and accurate information about health and safety in the mining industry. This service will assist in improving the health and safety of workers in the industry. The information will be maintained and distributed through a dial-in computer system known as EXIS (External Information System).

INTRODUCTION

Western Australia covers approximately one third of the Australian continent, a surface area of 2.5 million square kilometres. The State measures some 2,400 kilometres form north to south and 1,600 kilometres from east to west. Despite the size of the State the population is only 1.5 million persons with 80% of them residing in the capital, Perth, and only five regional centres with more than 20,000 people.

In 1996 the Western Australian mining and petroleum industries provided more than 75% of the State's total overseas exports. There are more than 50 different minerals in commercial production in Western Australia from more than 300 mining projects which, during 1996, produced an estimated:

- 41% of the worlds diamonds.
- 37% of the worlds tantalum.
- 27% of the worlds titanium.
- 19% of the worlds lithium.
- 18% of the worlds alumina.
- 12% of the worlds iron ore.
- 8% of the worlds gold.
- 7% of the worlds nickel.
- 4% of the worlds salt.

DME has defined its mission as "To manage and support the safe and sustainable development of mineral, petroleum and ground water resources in the best interests of the Community".

The Department's vision is that "Western Australia has the world's best exploration, development and operating regime for petroleum and mineral projects:

- Operational conditions are stable.
- Tenure is swiftly granted and secure.
- Employee and public safety are assured by industry-wide safety systems.
- The natural environment is suitably protected.
- Comprehensive geoscientific information and advice are readily accessible.
- The community receives appropriate returns from the exploitation of its natural resources."

The activities and functions of the DME fall into two broad categories: regulatory functions and provision of information or advice. It achieves it's objectives through a Program Management Structure.

The program statement covering the MOD of the Department is "To achieve improved safety, occupational health and environmental management in the mineral industry in keeping with community standards."

This is done by:

- Acquiring data regarding safety, occupational health and the environment.
- Assessing community perceptions and requirements with a view to setting minimum standards relating to safety, occupational health and the environment.
- Providing information (report-back, advice, education, training) to the community and the industry.
- Auditing, measuring and evaluating the industry's performance.
- Enforcing compliance by the industry with community standards.

MOD conducts regular inspections and audits of all mining operations in the State. These operations employed 39,500 persons in 1996, 35,500 on surface and 4,000 underground. The mines are spread throughout the State with a number located a great distance from any established communities. These remote mines operate fly in / fly out rosters,

mostly from the capital, Perth. In the case of one mine this involves a flight of some 2,100 kilometres.

The Division produces statistics, guidelines, codes of practice, significant incident reports, safety bulletins and other safety related information. At present the main method of distribution of this information is by mail or when an Inspector visits a site. This results in delays in getting this information to all mines in the State.

Since late 1992 there have been significant changes to mine safety legislation which has affected the way in which the mining industry and the MOD inspectorate have traditionally operated.

Amendment of the Mines Regulation Act in January 1993 introduced the concept of duty of care provisions together with the requirement for the election of health and safety representatives and the establishment of health and safety committees.

Removal in December 1993 of restrictive legislation governing the hours worked in mines has resulted in more effective use of expensive plant and equipment with a steady move towards continuous production and compressed work schedules.

Another major legislative change occurred in late 1995 and early 1996 with the introduction of the Mines Safety and Inspection Act and Regulations. This new legislation is less prescriptive and more reliant on the use of standards, guidelines and codes of practice than previously.

The new legislation now requires inspectors to conduct audits and change their role from one of law enforcement to one more of adviser, educator and provider of health and safety related information. It was recognised that it is essential that advice and information provided by MOD is current and consistent across the State and that information technology should play a critical role as the platform for distribution and maintenance of such information.

In addition to legislative change, Western Australia's mining sector, already the largest in Australia in terms of mineral value and number of employees, continues to expand. A significant number of mining operations and down stream processing facilities are scheduled to commence in the years ahead and expansion is forecast to continue to the end of the century and beyond with growth in the gold, nickel, iron ore, alumina and mineral sands sectors.

At times of expansion the mining sector is at risk of an adverse trend developing in the rate of fatal and serious accidents, similar to that which occurred in the gold mining sector between 1987 and 1989. Past experience has shown that it will be extremely difficult for MOD to increase its inspectorate staff

to provide the required level of advice and service to the expanded industry.

Traditionally, MOD have been a leader in the development and management of health and safety related databases in Australia and played a key role in the overall continuous improvement process that has been evident over the past decade in safety performance in the State's mining industry.

A major initiative is currently being implemented which will upgrade and consolidate the total IT system for the Division. Known as MINet, it is being established as a distributed computer network incorporating all of the systems required for the Division's activities. A major benefit to the industry is the incorporation of a sub-system of MINet titled EXIS (External Information System).

WHAT IS EXIS?

EXIS is a dial-in networked computer system provided by the Department to enable the mining industry to access on-line up-to-date information pertinent to safety and health in mining.

The software platform used for this system is Lotus Notes. Notes is essentially an effective tool for managing, distributing, reporting and communicating information to a group of users. In the Notes environment , users share information electronically in both read and write modes. Information, in the case with EXIS, is stored on a Notes server physically located within the Department. Clients can simply link into this server via a dial-in arrangement and replicate information onto their own PC's hard drive or their Notes server for distribution within their own organisation. This means that users essentially can be located anywhere in the country or in cities around the world and still share information and thoughts electronically in a timely manner.

Some useful features of Notes include:

• Graphical User Interface (GUI) that is easy to use providing a standard windows environment that the vast majority of existing computer users have a basic knowledge on how to operate.

• As a database, it is used to store information. This information may be typed directly into a Lotus Notes database or copied and pasted from other Windows product such as Word, Excel or WordPerfect. The information may be in the form of a word processing document, a spreadsheet, a presentation or graph. The information may then be retrieved later in a variety of configurations and sequences.

- The databases may be searched to locate specific information. For instance, it is possible to search an entire database for a word or phrase and to display only those documents containing that word or phrase.

- The information entered into the database can be validated to ensure consistency and accuracy of the data collection process. Where necessary, it is possible to link to and extract information from another database.

- The communication facility is a secure easy to use massaging system that allows information to be transferred between the DME EXIS server and the clients server.

- It is not necessary to have any experience of Notes to be able to use EXIS effectively.

WHAT IS AVAILABLE ON EXIS?

The first release of EXIS is now available allowing users to access the following databases (see Figure 1.):

- **Mines Safety and Inspection Act 1994**
  Full text of the Act may be read copied or searched for specific references.

- **Mines Safety Inspection Regulations 1995**
  Full text of the Regulations may be read copied or searched for specific references (see Figure 2.)

- **Minesafe Journal**
  The quarterly journal issue by MOD is available. Currently it includes the latest issues, however, it is envisaged in time the entire series will be made available to clients

- **FYIs (For Your Information)**
  Short sanitised descriptions of various incidents and accidents reported to MOD in accordance with the legislation. Can be viewed by FYI number, surface or underground, or type. Very useful for site toolbox meetings.

- **AXTAT Reports and Graphs**
- Each month users can receive their own company and site accident statistical data in the form of graphs, pie charts and tables in which they can compare with industry averages (see Figures 3 and 4).

- **DME Forms**
  Companies can now report AXTAT returns, such as the Mining Incident Report and Monthly Status forms electronically via this database (see Figure 5.)

- **Discussion Database**
  A mechanism for industry to share and discuss safety related information. Operates similar to a bulletin board.

- **Significant Incident Reports**
  Information regularly put out by the State Mining Engineer pertaining to incidents of significance that may or may not of resulted in injury but had potential to cause serious harm (see Figure 6.).

- **Safety Bulletins**
  MOD notices regarding health and safety matters aimed at promoting safe work practices.

POTENTIAL EXIS DATABASES UNDER CONSIDERATION

One additional feature of the EXIS system is the ability to add new databases as they are developed. So effectively, the system is an dynamic system in which the number of databases can grow depending on user demand. Although there is currently only nine databases available MOD are currently working on and considering several new databases including the following:

- MOD (Mining Operations Division) Guidelines (under construction)
- WA Mining Fatalities (under consideration)
- Australian Mining Fatalities (under consideration)
- MOD Papers (under consideration)
- Standard Presentation "Tool Box" (under consideration)
- Useful Internet Bookmark Addresses (under consideration)
- Current Minehealth Card Holders Information (under consideration)
- Prosecutions database (under consideration)
- Course/Seminar registration list (under consideration)
- MOD library catalogue (under consideration)
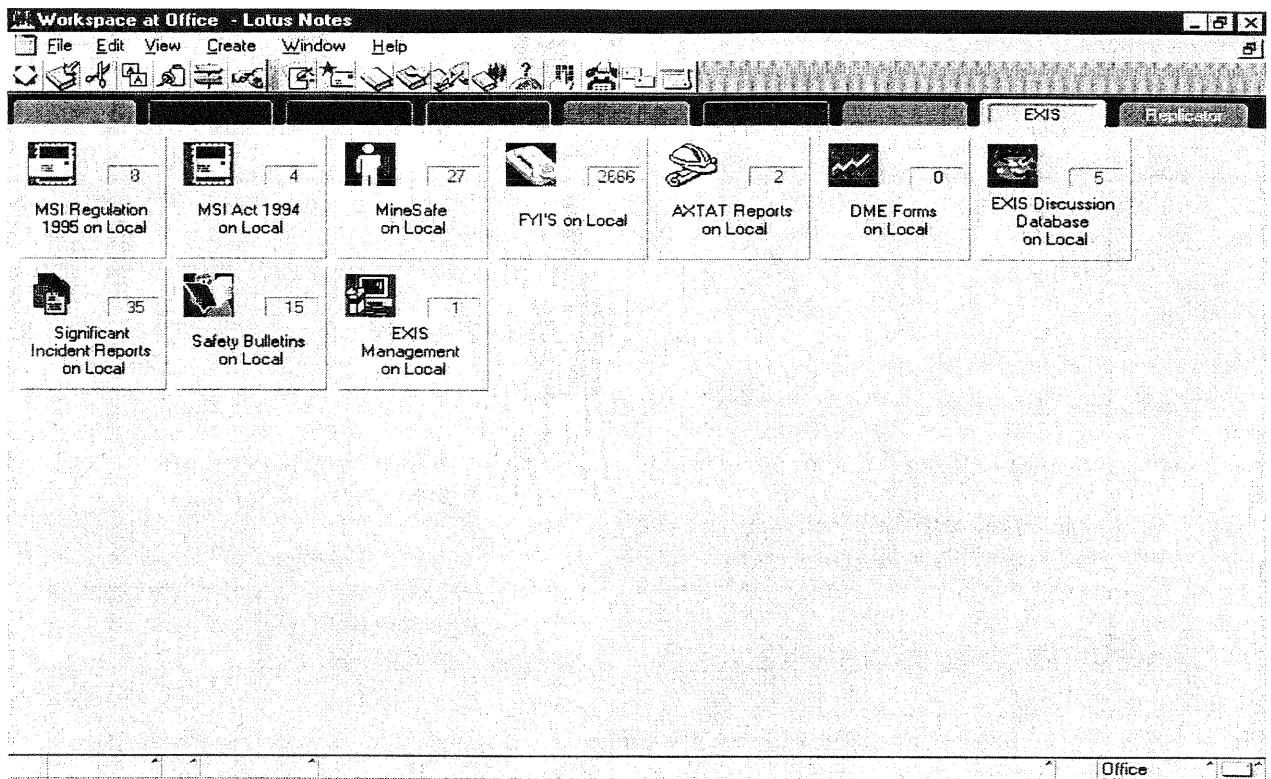- Photographs database (under consideration)

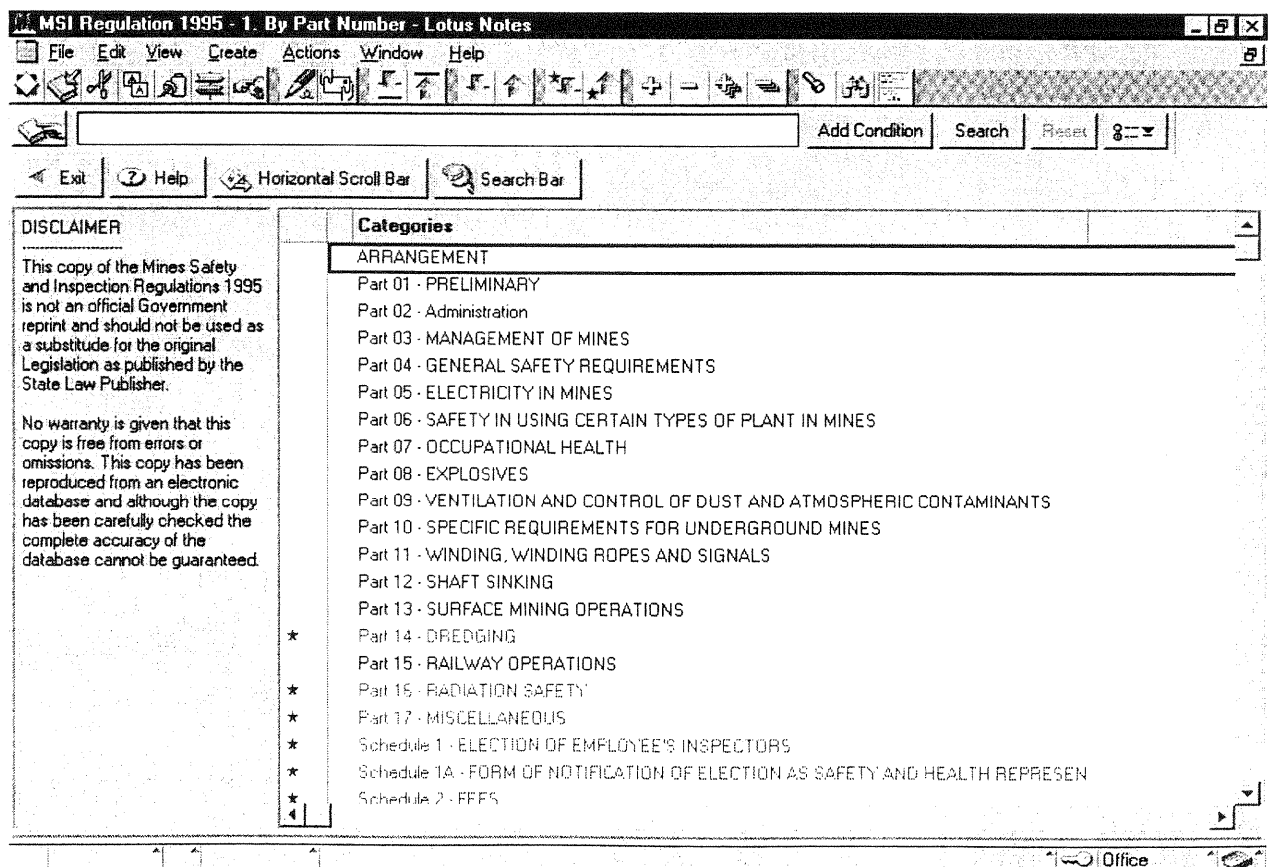Figure 1. A typical EXIS Lotus Notes workspace screen.

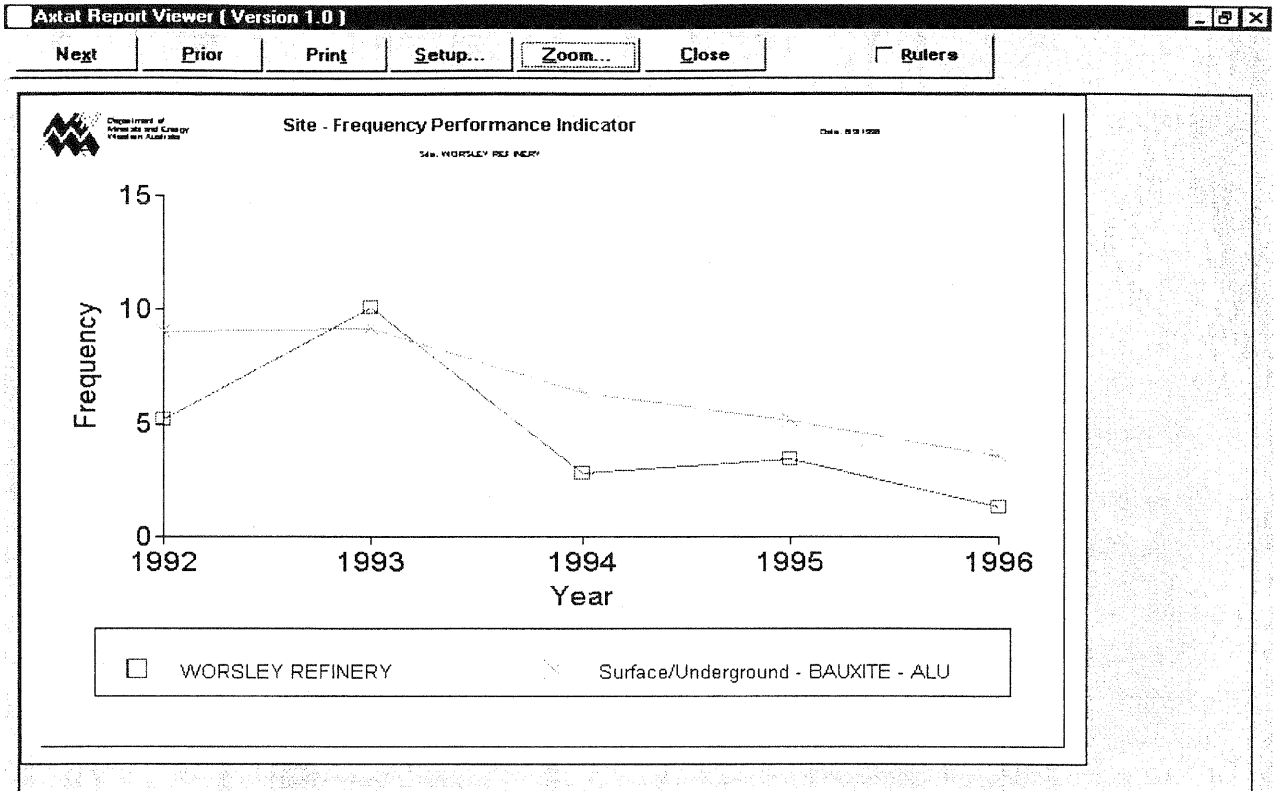Figure 2. Mines Safety and Inspection Regulations 1995 database.

Figure 3. A sample of a site specific LTIFR graph available to registered EXIS users.
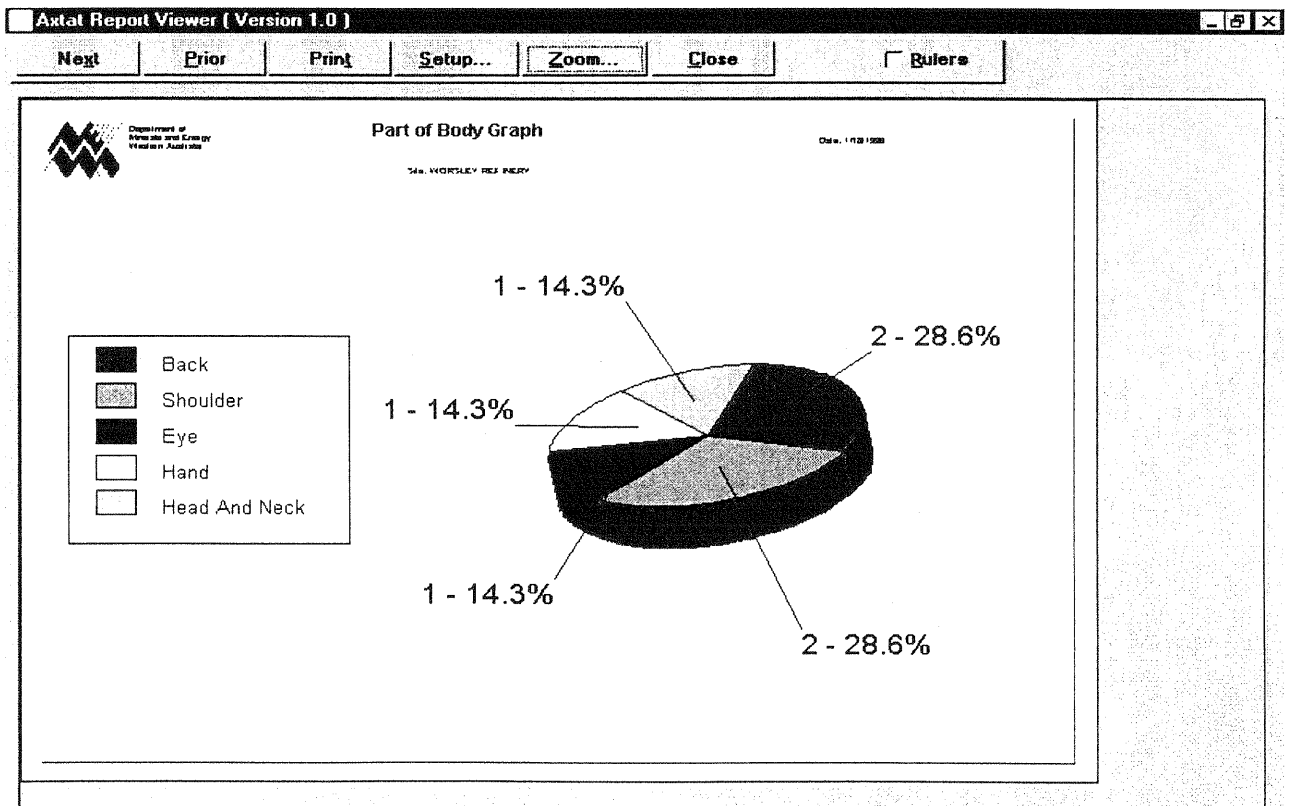

Figure 4. A sample of a site specific pie chart for injuries by part of body available to EXIS users

Figure 5. DME Forms database AXTAT Mining Incident Report Form.

Figure 6. Significant Incident Report Database showing SIR No. 10 Cyanide Poisoning.

EXIS AND THE WORLD WIDE WEB

The DME Internet home page is currently undergoing redevelopment. It is envisaged that the information held on the EXIS server, with exception of site specific data, will be made available through this medium. So users who do not wish receive or send client specific information such as the AXTAT reports, DME Forms, and Discussion Databases, may decide, as an alternative, to access EXIS information via the Internet route. One disadvantage with this is that the client will need to be on-line to access information whereas with the Lotus Notes they have the information situated on the PC's hard drive at all times only requiring to be on-line for updates and the exchange of data.

How to register

Clients requiring access to the EXIS system will need a modem and Lotus Notes V4.1 or later on a PC or Server.
The minimum configuration recommended for a PC to run EXIS is a 486 IBM compatible, 500Mb Hd, 12Mb RAM and a 14.4bps modem running in a windows environment.
The computer on which EXIS is to be installed must have a legal copy of Lotus Notes installed. If it is intended to run Lotus Notes on a server then the IT manager of the company should liaise with the Department's help desk to organise Cross Certification.

To register for access to EXIS a client must complete the registration form in the EXIS brochure. Upon registration a starter pack will be sent out which consists of several floppy disks containing the EXIS databases, installation instructions and an EXIS User Guide. There is no charge for registration or accessing the Department's EXIS server. The only cost to the client is the telephone call when dialling (via a modem) to make a connection.

CONCLUSION

With recent changes in legislation which has fundamentally altered the role DME is required to play in health and safety matters, together with the expansion in the mining sector forecast to continue until at least the end of the century, to maintain a commitment to a downward trend in mine accidents and disease it is necessary to improve and enhance the distribution of current health and safety information. EXIS will in time demonstrate DME's ability to improve the distribution and communication of information by providing mining companies and any other interested parties with free access to a comprehensive array of data by a direct dial in facility or, in time, through the world wide web. EXIS clearly demonstrates the Western Australian government's commitment to a safer workplace in the mining industry and making the state a world leader in systems for collection and distribution of health and safety information for a mining industry.