BEST PRACTICE & GEOLOGICAL DATABASES

A 'White-Paper' By Visible Data Analysis Limited August 1997

Introduction

This paper is to promote an AusIMM publication deriving from a seminar 'The Resource Database Towards 2000' held on 16/5/97 at the University of Wollongong. **As a database and data analysis consultant who attended this seminar I recommend it as it promotes 'Best Practice' in the Mining Industry**. If you are an exploration or mining company and you are planning to build a database then this publication from the AusIMM is essential reading.

The Papers

I summarise just two of the 13 papers presented which will hopefully inspire you to order this publication from the AusIMM and start using best practice when you build your next database!

The Resource Database: Now and in the Future

By R.W.Lewis Placer Pacific Limited

The information that is the resource database is the data that comes from an exploration program. This is all the geological, sampling, assaying, mining, geotechnical, metallurgical & environmental data needed for on-going decisions during exploration & ultimately for a feasibility study leading to an investment decision on a mineral deposit.

It is important to demonstrate to external parties that the resource data is adequate, and has been competantly gathered and assembled.

Professional database managers should be employed to manage and update the database, once the data have been adequately checked. Consistent and thorough checking of the database is one of the most critical issues in exploration …Unfortunately

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On future directions

Specialists will be used to enter and verify data, manage field databases, maintain the computer equipment and software in the field and train geologists in the collection and manipulation of electronic data.

Technical specialists are necessary to allow the geologists time to interpret their data.

Conclusions

Better data is the essential first step to better ore reserves and more reliable production planning.♦

Establishing and Maintaining the Resource Database

By Brett Larkin (GeoLark Consultants)

I first met Brett when he reviewed our software needs when I was a geologist at Pancontinental Mining Ltd in the 1980's. He now runs his own consulting business. His comments are particularly relevent. GE

Today, most resource databases consist of a combination of data stored in a commercially available resource modelling package plus sets of other files that are accessed through spreadsheets, database packages or text editors. This strategy relies on particular skills which :-

- Geologists are not trained in at university
- Are difficult to quantify
- Are rarely specifically sought in job interviews
- Are not well known by most geological managers

This is a recipe for possible disaster.

What do these skills involve ? In simplest terms they mean that if the geologist responsible for the data management was "run over by a bus" could another geologist come in now or ten years in the future and recover it. i.e

- Determine what data were collected
- Determine where they are stored
- Be confident that the data are correct
- Access and manipulate the data

This paper describes some of the "nuts and bolts" methodologies required to meet these goals.

there is a lot of bad data stored in expensive relational databases.

The Written Word

The single most important part of any database is the original written copy of the data. This could be the geologist's coded log sheets, the surveyor's field notes or the lab's work sheets.

The written copy of the data must not only be kept but it must also be properly filed. For borehole data, this should consist of a separate folder for each hole containing every piece of paper relating to that hole.

As the data have cost the company so much to collect, it is also prudent to have a duplicate copy of all the written data held off-site in case of fire or other emergency.

Double Keying the written word

The importance of double keying data, especially numerical data, when entering the written data into the computer should be emphasised. What is double keying ? It is entering the entire data set into the computer twice and then using the computer to compare the two copies. This can be done by entering the data into two separate worksheets in a spreadsheet and then creating a third worksheet showing the difference between the two. Once correct ,the data should be imported directly into the database from the spreadsheet.

The Digital Word

These days much original data never exist on paper but are recorded directly onto diskette , hard disk, CD-ROM etc. Not only must it be kept but it must also be easy to find. This means having appropriate file naming conventions for the files and for the floppy disks to be clearly labelled, preferably with a separate disk for each hole. Again as with the written word, if the copy of the data on the computer is later changed some record should be kept of who changed it and why.

Consistent Database formats

Much data today are stored in spreadsheets or general database packages. These have enormous flexibility but this also means that the user has to implement their own conventions. When there are a series of drilling campaigns or even a series of geologists managing the data they may change the formats of their new data. e.g. at the simplest level adding more fields or increasing the size of particular fields but not modify their old data to the same format.

Dictionary Management

Many commercial resource data systems use a series of one or two letter codes to represent particular characteristics of the rocks and have a lookup table known as a dictionary to explain what the various codes mean. This dictionary becomes an important part of the actual data set and must be archived or transferred along with it.

One cannot have every geologist who works on a project creating their own set of codes to suit the way they would like to describe the geology. Only the data manager should be able to modify the dictionary.

Good multiple copies of the data

The first law of working with data on a computer is :

One must always make backup copies of all data as it may become lost or corrupted.

Nearly all geologists working with data on computer will realise that they need to take a regular backup of their work and that they only need to backup that work that has been modified since it was last backed up. Like the copies of one's original data, some of the backup copies should be kept off-site in case of fire etc.

Bad multiple copies of the data

It is imperative that the geologist managing the data establishes a system to ensure that only one copy of the data is the working copy and clearly distinguishes which copy this is.

Resource Reports

A detailed list of the validation performed on the data should be included in any resource report. A list of all the computer files, where they are stored and what they contain is also a useful appendix to a resource report.

Conclusion

Too many geologists have had thrust upon them the responsibility of establishing and maintaining a database without receiving proper training in data management. It should be remembered that this is a different skill to just learning how to operate particular computer software packages.♦