CUBE CONSULTING

Setting up an Access database for use in Surpac

Introduction

The database mapper functionality within Surpac makes it easy to quickly connect to an Access database, linking to appropriate tables and working with data. However, if this is done without a working knowledge of Access, there is a notable performance deficiency during the extracting, compositing of samples or writing to the database from within Surpac.

Cube's observation is that the majority of Surpac users are creating Access databases as a subset of a larger corporate database management system. Indexing, performance and database management happens inside the corporate system and the Access database is formed periodically for use within Surpac. The assumption appears to be that indexing flows from the parent database (e.g. acQuire, DataShed, native SQL) into the Access database, but in many instances this is not the case. Indexing must be explicitly set up in Access prior to use with Surpac to ensure appropriate performance.

Based on current test work completed by Cube, setting up the primary keys and indexing has significantly reduced the processing time required when reading (i.e. extracting samples or compositing) or writing to the database (i.e. flagging the database with estimation domains).

The purpose of this technical note is to outline how an Access database should be setup (primary keys, indexing) to ensure working with databases within Surpac is optimal.

Cube acknowledges Kim Ferguson-Thomas of Geovia for her helpful insights into the Surpac Geological Database and thanks her for assistance in resolving this matter.

1. Database Requirements

The following database tables and fields are required for all Surpac databases:

- Collar Table
  - hole_id
  - y
  - x
  - z
  - max_depth
  - hole_path
- Survey Table
  - hole_id
  - depth
  - dip
  - azimuth
- Styles Table
  - table_name
  - field_name
  - style_type
  - code

  - from_value
  - to_value
  - graphics_colour
  - plotting_colour
  - graphics_pattern
  - plotting_pattern
  - line_colour
  - line_style
  - line_weight
  - marker_style
  - marker_size

- Optional interval table (additional tables such as assay, lithology, etc)
  - hole_id
  - sample_id
  - depth_from
  - depth_to
  - additional variables

The database mapping function allows you to map your existing Access database field and table names to the Surpac required names, without worrying about the naming convention used in your corporate database. However, this ease of use has led to issues arising from ignoring indexing of the Access database.

2. Indexing Setup

Indexing of the Geological Database is the key factor to ensure the optimal performance of the Surpac database functions. Best practice is to review the indexing in the Access database prior to linking with Surpac. The indexing then needs to be reviewed in the Surpac database definition file (i.e. ddb file).

The critical tables to get the correct indexing for optimal performance are the collar, survey and optional downhole tables (e.g. geology, assay etc).

Access Database

The following indexing is required in the Access database (refer to the Appendix):

Collar Table:

- Index Name: **idx1**
- Field Name: **hole_id**
- Sort Order: Ascending
- Index Properties:
  - Primary: Yes
  - Unique: Yes
  - Ignore Nulls: No

Survey Table

- Index Name: **idx2**
- Field Name: **hole_id**
- Sort Order: Ascending
- Index Properties:
  - Primary: Yes
  - Unique: Yes
  - Ignore Nulls: No
- Index Name: **idx2**
- Field Name: **depth**
- Sort Order: Ascending
- Index Properties:
  - Primary: Yes
  - Unique: Yes
  - Ignore Nulls: No

Styles Table

- Index Name: **idx4**
- Field Name: **table_name**
- Sort Order: Ascending
- Index Properties:
  - Primary: No
  - Unique: No
  - Ignore Nulls: No

- Index Name: **idx5**
- Field Name: **field_name**
- Sort Order: Ascending
- Index Properties:
  - Primary: No
  - Unique: No
  - Ignore Nulls: No

Optional Interval Tables (e.g. assay)

- Index Name: **idx6**
- Field Name: **hole_id**
- Sort Order: Ascending
- Index Properties:
  - Primary: Yes
  - Unique: Yes
  - Ignore Nulls: No

- Index Name: **idx6**
- Field Name: **depth**
- Sort Order: Ascending
- Index Properties:
  - Primary: Yes
  - Unique: Yes
  - Ignore Nulls: Yes

It should be noted the Index Name associated with the tables is dependent on their alphabetical order within the database.

Surpac DDB File

Within the Surpac DDB file the indexing information is stored at the bottom of mapping information for each table. An example of the indexing information is given below for the collar and an assay table.

- Collar Table

  INDEX idx1 UNIQUE

  ASC hole_id

- Assay Table

  INDEX idx6 UNIQUE

  ASC hole_id

  ASC depth_from

However, if you have set up the indexing correctly in the Access database then the .ddb file should be configured correctly for performance.

NB: All issues with database connectivity should be referred to the GEOVIA support team. This technical note is for informational purposes only.

3. Cube's capabilities and experience

Cube Consulting has extensive experience and skills in geostatistical estimation, resource modelling, grade control. The Cube geology team is comprised of hands-on, real-world experienced mining professionals who have held senior positions in operating mines. In their previous roles, they acquired valuable knowledge which allows them to provide high-quality practical advice and consulting services.

Established in 2000 in Perth, Western Australia, Cube Consulting has grown to become a world class Mining Services Company, working with our customers to add value to their projects through considered and practical analyses and advice.

4. Appendix

Collar Table Indexing

collar

Field Name	Data Type
company	Short Text
dh_type	Short Text
hole_id	Short Text
hole_path	Short Text
max_depth	Number
resvalid	Short Text
resvalid_comment	Short Text
x	Number
y	Number
z	Number

Indexes: collar

Index Name	Field Name	Sort Order
idx1	hole_id	Ascending

Index Properties

Primary	Yes
Unique	Yes
Ignore Nulls	No

The name for this index. Each index can use up to 10 fields.

Survey Table Indexing

survey

Field Name	Data Type
azimuth	Number
depth	Number
dip	Number
hole_id	Short Text
type	Short Text

Indexes: survey

Index Name	Field Name	Sort Order
idx2	hole_id	Ascending
	depth	Ascending

Index Properties

Primary	Yes
Unique	Yes
Ignore Nulls	No

The name for this index. Each index can use up to 10 fields.

Interval Table Indexing

assay

Field Name	Data Type
ag_ppm	Number
au_ppm	Number
cu_per	Number
cusol_per	Number
depth_from	Number
depth_to	Number
hole_id	Short Text
pb	Number
samp_id	Short Text
zn	Number

Indexes: assay

Index Name	Field Name	Sort Order
idx6	hole_id	Ascending
	depth_from	Ascending

Index Properties

Primary	Yes
Unique	Yes
Ignore Nulls	No

The name for this index. Each index can use up to 10 fields.