

Two factors are essential if a goal of your surface mining operation is to increase rotary blast hole performance and reduce drilling costs. The operator must be provided with information on key drilling parameters; and critical data must be logged, reported on, and measured. The DEI+Logger is the newest addition to a new family of monitoring products for blast hole drills from Thunderbird. The DEI+Logger will provide both the operator and the office with the information they need to enhance drill and blasting productivity.



The Logger uses the latest display and electronics technology, and combines the features of both the Drilling Efficiency Indicator (DEI) and Stratalogger into a single module. The DEI+Logger is upgraded from a DEI PLUS unit by uploading the Logger program into the flash memory in the Plus. The DEI+Logger has all of the standard drilling and statistics screens and features available in the DEI Plus. These include:

- **Drilling Screens**
- **Pipe-in-Hole Warning**
- **Previous Hole Information**
- **Current Shift Statistics**
- **Previous Shift Statistics**
- **Production Statistics**
- **Other Screens and Features Include:**
 - Target depth settings
 - ROP and depth alarms
 - Calibration instruction
 - Diagnostics/troubleshooting
 - Help and Spare Parts Lists

DEI+LOGGER Features

The data entry is via the DEI+Logger display keys. The drill operator can enter alphanumerical characters or he can select from drop-down menus, which are configured in the office to meet the specific requirements of each mine. Up to 1 MB of data can be stored. Logged data can be off-loaded from DEI+LOGGER with PDA or radio telemetry. There are a number of key activities or parameters that can be logged.

Operator, Hole and Pattern Numbers

These numbers are entered into the Logger using the keypad. Hole numbers are automatically requested at the start of each new hole. There is a setting that allows the hole numbers to automatically increment.

Delay Codes

Mine specific delay codes are configured in the office and then transferred to the DEI+Logger.



Bit and Drill Stem Components

All components in the drill stem including bits, drill pipe, hammers, stabilizers, deck bushings, etc can be tracked by serial number, date, drill footage, and drill time. When a new component is installed, the operator enters the serial number. The rest of the information is automatically recorded.

Drilling Conditions, Fluids and Consumables

Drilling conditions such as wet, hard, broken, redrill can be logged for each hole. These conditions are mine configurable. A record of the dates and usage of fluids and consumables can be recorded with the Logger.

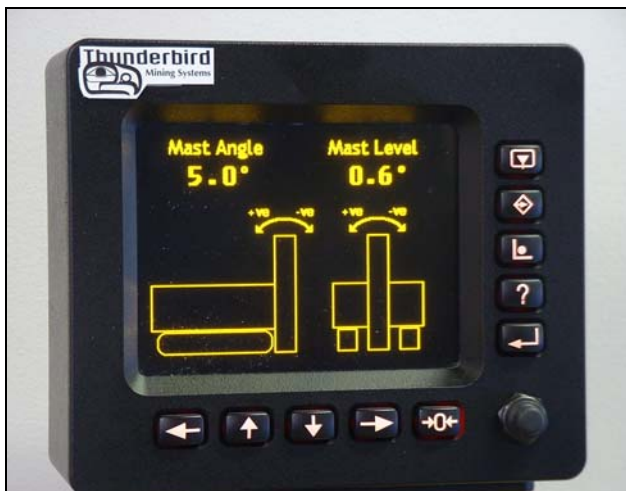
Time

The DEI+Logger displays to the operator and records for use in the database, all the times associated with the drilling operation. The drill operator can review information for his shift or previous shifts for transfer to his time card. Other statistics such as Total Footage, Number of Holes Drilled, Average ROP and Drill Times are also available to the operator.



Mast Angle Option

An option available for the DEI+Logger is a mast or drill-leveling feature. A high precision inclinometer is added to the Logger system. The operator can then select a screen and use it as a guide for leveling the drill or check the mast on angle drilling patterns. The system is accurate to +/- 0.1 degree. Self-calibrating is built into the system

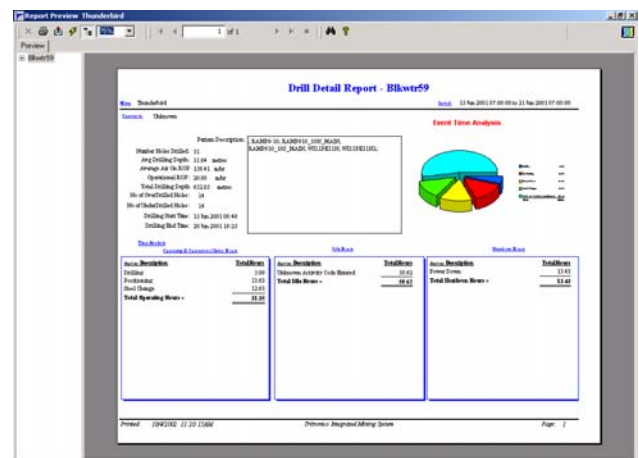


Reporting

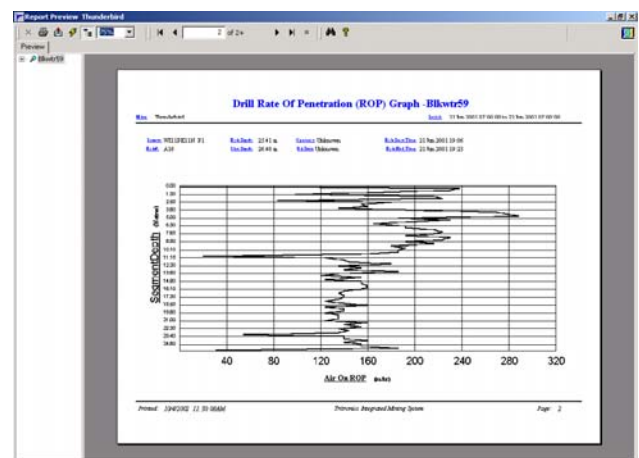
A handheld PDA, running the Microsoft CE operating system, is used to off-load the recorded data from the DEI+ Logger and to transfer configuration files from the office to the Logger. A radio option will be available in the future.

Thunderbird uses the Microsoft Access Database and Crystal Reports to generate a number of standard reports. Data can be easily exported to Microsoft Word or Excel for reporting or more detailed analysis.

Detailed Drill Report—time period can be specified



Rate of Penetration Graph



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