



GSM-19 Version 7.0 – The “Efficiency” Release

With the resurgence in mineral exploration coupled with continuing demands on time, geologists and geophysicists are seeking tools that will enable them to achieve greater efficiencies in both the field and office.

The new version 7.0 release of GSM-19’s magnetometers and gradiometers is designed to enhance efficiency in key areas, such as field work; data input and output, and preparation of data for advanced post-processing as required to deliver exploration products, such as models and maps.

Specific v7.0 capabilities include:

- Standard Line Format for Data Import
- Picket Marking / Annotation
- GPS Elevation for Enhanced Magnetic Data Modeling
- <1.5m Internal GPS Capability
- Enhanced Positioning Resolution for GPS Surveys
- USB-RS232 Adapter for Easy Data Transfer from Non RS232 PCs
- Programmable Export Format

Additional Enhancements

- Improved Signal Processing for Magnetic Field Readings
- Multi-Sensor Capability
- Ergonomic Backpack Option (Effective for “extreme” geophysics in difficult terrains and made for everyday performance as well)
- All Terrain Vehicle Mode Option
- Support of Multiple GPS Engines

Standard Line Format for Data Import

With the current GSM-19 generations, the field operator or geophysicist may be required to spend time editing the data to input line numbers.

One of the industry standard formats for geophysical data (Encom-, Geosoft-, and Intrepid-compatible) is the line-oriented format. Here, individual lines of data are marked by a simple line number (for example, Line 34) and blocks of data follow until the next line number is encountered, and the process repeats.

The GSM-19 v7.0 Series has now implemented a Standard Line Format for Data Import to eliminate non-productive data manipulation tasks.

Picket Marking / Annotation

One of the main roles of magnetic surveys is to provide positioning information that can be used to georeferenced magnetic maps with maps obtained from different sources, such as electromagnetic or other ground surveys.

The GSM-19 now provides a special Picket Marking function that enables the operator to mark a picket position in the field for future reference. This versatile capability also enables the user to mark the location of hazards, cultural objects (such as fences), or rivers, streams, etc. Another useful application is text marking of topographic highs and lows for target modeling purposes.



Lane Guidance

Lane guidance is a feature that enables users of GPS-configured systems to proceed in a survey with on-screen notification when the operator has exceeded the survey tolerance (i.e. deviation from line). Version 7.0 provides a larger arrow for guidance purposes, which enables the operator to more tightly control survey “wander”.

Programmable Output

Often an instrument manufacturer’s format is fixed – creating challenges in post-processing data as records may require manipulation to convert them to a format suitable for today’s standard software packages.

The GSM-19’s v7.0 solution is to implement Programmable Output. Customers have a choice of a default output format or selecting up to 10 data fields. Each field can, in turn, be allocated to a set of 10 pre-defined variables, including X, Y, Elev, Time / GPS Time Total Field1, Corrected Total Field, Grad, SQ (Signal Quality), Number of Satellites, Marker1 and Marker2.

Note: Marker fields relate to the v7.0 Picket Marking / Annotation capability.

USB-RS232 Adapter for Data Transfer

Today’s personal computers are frequently equipped with Universal Serial Bus ports. USB is a standard port for connecting external devices (such as magnetometers, etc.) to Windows and Macintosh computers.

To enable customers to take advantage of the USB ports now provided on many PCs, including laptops, the GSM-19 now provides a standard USB cable for use with its systems. This cable can be purchased as an accessory for a nominal charge.

GPS Elevation for Enhanced Magnetic Data Modeling

As technologies advance, many end users of magnetic data are seeking to employ modeling routines for enhanced interpretation, integration of results, and risk reduction.

Recognizing this need through discussion with key customers, the GSM-19 now includes GPS elevation data as a standard input / output item in Version 7.0. This provides key data required by modeling routines and helps to ensure that magnetic modeling results reflect “true” geology and are not distorted through lack of elevation data.

Enhanced resolution for GPS surveys

GPS-based surveying is only as precise as the resolution to which the system can resolve distances. Previously, GSM-19’s Universal Transverse Mercator (UTM) resolution was 1m; now it has been enhanced to 0.01m. This eliminates a previous scenario in which it was possible to have two or more readings occur at the “same” location.

Customers can now resolve positioning data to their full two decimal precision (ex. 1.20 and 1.25). This very high resolution eliminates one source of error (i.e. GPS positioning) and ensures that data locations can be fully resolved for subsequent follow-up (i.e. drilling, excavation, etc.) as required.

<1.5m Internal GPS Capability

The GSM-19 has integrated GPS electronics inside its magnetometers and gradiometers for a number of years – a significant advantage for users in terms of cost, “clean” readings (i.e. minimal noise in contrast to some externally mounted GPS systems), and complexity.



With Version 7.0, the GSM-19 supports an internal board with specifications to <1.5m resolution via WAAS and EGNOS. And for customers who are operating outside of these systems, the GSM-19 also designed an external GPS for use with OmniStar or Thales services.

OTHER ENHANCEMENTS

GSM-19's Research and Development team is continuously developing new capabilities that will enhance data quality and survey effectiveness. Some of these include:

- **Improved Signal Processing for Magnetic Field Readings**

This capability is based on a) de-spiking (for example, when a user brushes against a tree branch, the magnetometer will automatically handle this type of artificial noise), and on b) optimized measurement period. Here the measurement period has been extended to maximize signal without adding noise.

- **Multi-Sensor Capability**

Both the Overhauser and K-Mag (optically pumped Potassium) series of magnetometers are capable of handling up to four channels of magnetometer readings. This is effective for productivity (i.e. configuration of horizontal sensor installations) as well as for gradient-type readings between sensors arrayed in customer-defined configurations.

- **Ergonomic Backpack**

For geophysical operators facing the daily challenge of performing high efficiency surveys in sometimes-formidable field conditions, it is essential that systems be designed around ergonomic principles. Now, a new ergonomic backpack from a major supplier of outdoor equipment has been added to our line of accessories. The main benefit is that operators can function more efficiently and acquire more data in a typical day than with heavier alternatives from other suppliers. This capability is especially valuable in extreme temperature conditions; in terrain that is difficult to traverse; or high productivity surveys.

**Illuminate Geology
with Advanced Technology**