ABSTRACT

The funds provided by ICCI/DCEO were used to purchase a gas chromatograph. Since its anticipated use was analyzing mine air as well as precise measurement of gas composition in the laboratory, the model, **Mine Gas Analyzer** - GC17A, was short-listed after completing an extensive market and product survey. The order was placed with Shimadzu in October 2003. The GC was delivered in January 2004. However, the training by Shimadzu personnel was completed only in February. Since there were some initial problems with calibration of the GC, and this had to be fixed by Shimadzu personnel, it became usable only in March 2004.

The complete GC system in-place at this time has two capillary columns, a methanizer, a high gas pressure inlet valve, and a state-of-the-art PC controlled data acquisition and analysis software package. With appropriate attachments, the GC is capable of complete automation. Its analytical capability includes analyzing H₂, O₂, N₂, CO, CO₂, CH₄, C₂H₄, C₂H₂, and C₂H₆. The limits of detection are 20 ppm (0.2%) for O₂ and N₂ and 1 ppm (0.01%) for CO, CO₂ and methane. Hence, it is ideal for analyzing mine air samples, as well as use in the laboratory for flow characterization of coals and rocks where multiple gases are involved. At this time, it is envisioned that the GC will be used primarily for research in the areas of coalbed methane operations, carbon dioxide sequestration, flu gas analysis, and possibly, injection projects. Later on, it will be used for analyzing air samples taken from underground coal mines as well.