



**Tuesday, September 21, 2004**  
**8:00 AM– 12:00 Noon**

## **(8) BATTERY HAZARDS**

### **Tutorial Description**

This course addresses the hazards of station batteries in telecommunications applications. It covers primarily lead-acid flooded and valve-regulated batteries. Other types are discussed. The areas of concern addressed are physical and electrical. The course emphasizes a view that may reflect a “Regulator’s” perspective.

Physical aspects of the battery include all environmental conditions including temperature, humidity, ventilation and physical protection. The significance of different operating temperatures of the battery is discussed. Methods to calculate the required amount of air changes per unit time for ventilation are provided. Physical protection includes the mounting of the battery and the protection around it. Issues regarding seismic protection, housekeeping and security are also presented and discussed. Spill containment and issues surrounding it will be addressed.

In the area of electrical parameters, items of discussion include the significance of float current on determining the life expectancy of the battery. The various means of measuring and monitoring float current are presented and discussed. Measurements that aid in mitigating hazards are discussed such as the significance of measuring insulation resistance. The methods and typical instruments employed to make these measurements are discussed in detail. The course explores the methods of making “ohmic” measurements and the significance of these methods with regard to determining life expectancy and predicting catastrophic failures. System arrangements are discussed with the emphasis on protection. Various battery disconnecting means and

arrangements are reviewed and discussed in detail addressing the advantages and disadvantages of each.

### **Tutorial Level and Benefits**

This course should be attended by engineers doing telecommunications power system design and others doing related maintenance work.

### **About the Presenter**

Over the last 36 years Mr. Thomas G. Croda has held positions as Principal Engineer and Senior Engineer for the following companies: CSI Telecommunications, Navisite, Sprint Long Distance and GTE Lenkurt. He is the recipient of numerous commendations for distinctive innovations and the developer of various products contributing to connectorization, improved grounding techniques, and DC power plant design.

Tom designed AC and DC power plant architectures for telecommunications and data facilities. He also investigated power systems problems, provided solutions and provided oversight of complex live power installations and reconfigurations.

He co-authored ANSI standards on DC Power, stationary batteries, electrical protection, and physical protection of telecommunications facilities. He is Past Vice Chairman of Technical Subcommittees T1E1 and T1Y1 and Past Convener of Working Group T1E1.5 on Telecom Power.