External Audits Could Improve DC Metro Safety and Reliability
By Byron A. Ellis – May 29, 2012

The doors on two District of Columbia Metro Rail cars opened while the train was moving on Tuesday, May 15, 2012. Although no one was injured, the event under any circumstance is a monumental safety and reliability failure. On moving trains, doors should be designed to fail in the closed position.

Passenger car train doors must be designed and maintained in a fail-safe manner, whereby no single point of failure causes an unsafe condition. Thus, any door failure should occur only in the safe state, in the door closed mode.

Generally, for the door to open a valid door-open command, a valid enable signal, and a valid no motion signal should be required to open the door upon an open door signal.

The history of unsafe DC Metro incidents is appalling and indicates a poor leadership structure. Residents of the District of Columbia, Virginia, and Maryland deserve better.

Metro riders should require that Metro Board review the train doors' preventive maintenance regimes with the public, as well as the history of hazard analyzes performed to validate the system safety.

Riders should also require the Board to publicly review documentation of Failure Modes and Effects Analysis (FMEA) used to determine safety, reliability, and quality problems associated with the train doors. FMEA is an integrated logistic support technique used to improve system reliability. It is a tool to identify failure modes based on functionality.

Additionally, riders should require yearly independent maintenance and safety audits of the entire transit system, since safety and reliability history indicates a lack of administrative capacity within the Metro system.