# Ambiguity Analysis

Ambiguity analysis is the process of identifying the system faults that result in identical indications to the end user and employing additional test resources (e.g. support equipment, historical data, etc.) with the goal of reducing the fault group to one replaceable item. An ambiguity group is the final resolution of a diagnostic fault isolation procedure.

Ambiguity analysis is used to help determine both the safety and maintainability of a system. It focuses on the designed human system interface (HSI) and the perceived ability to perform fault recognition. Its objective is to ensure that critical failures are uniquely alerted to the operator; and that ambiguity groups remain small to reduce troubleshooting time.
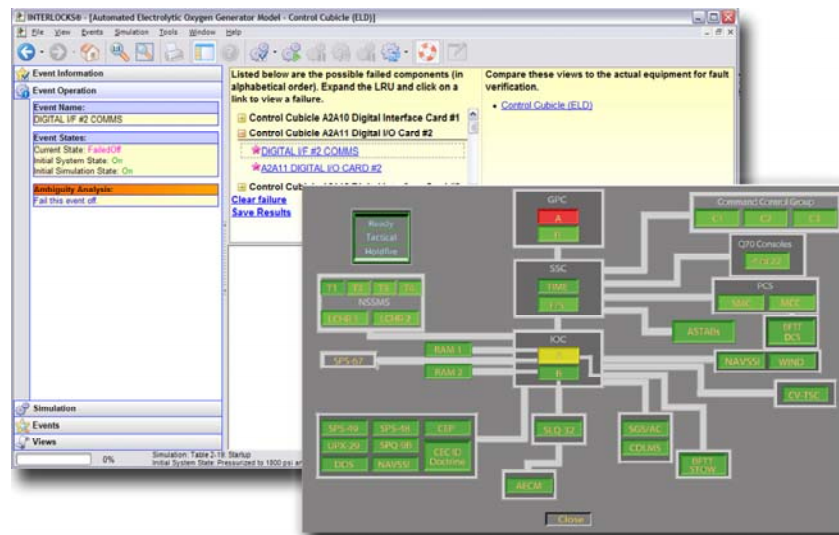
INTERLOCKS® modeling and simulation tool is a cost-effective and efficient means to conduct this analysis. Using existing discrete event simulation and fault isolation, the tool automatically identifies every failure that produces the same set of symptom indications. Using a model of the actual system design, INTERLOCKS is capable of finding interactions within the system that are not readily apparent using traditional methods. The engineer can use the tool to perform ambiguity analysis by:

- Entering the symptom indications and having INTERLOCKS calculate every possible component failure that produces the same set of indications, or
- Entering a fault and having INTERLOCKS identify what the symptom indications are for this fault and all other components within the system that look identical to this fault.