

HVAC/R Failure Analysis Outline

A full day seminar offered at GAI's Laboratory

Heat Transfer

Conduction
Convection
Radiation

Basic Combustion

Fuel Gases
Fuel Oils
Solid Fuels

Basic Refrigeration

Carnot Cycle
Refrigerants
Psychrometrics

Heating Appliances

Furnaces
Boilers
Heat Pumps

Cooling Appliances

Split Systems
Ductless Mini-Split Systems
Window Units

Ventilation Appliances

Humidifiers
Dehumidifiers
Exhaust Fans
Unit Ventilators

Witness Interviews

General Background
Events of the Failure
Product Information

Scene Examinations

Documentation
Photography
Systems Testing
Evidence Collection

Laboratory Examinations

Documentation
Photography
Radiography
Testing
Disassembly

Testing

Electrical
Mechanical
Thermal
Ignition

Failure Modes

Scientific Method
Failure Mode & Effects Analysis
Fault Tree Analysis