

Appendix 1.1: Charter for Intrusive Inspection Working Group

Objective: To collect for the aging civil fleet program-essential wire degradation data not forthcoming from the ASTF non-intrusive inspections.

Background: The ATA ASTF non-intrusive inspections will provide data on physically observable faults in wiring and obvious functional failures. These inspections cannot, unfortunately, provide data on certain latent defects and invisible degenerative conditions, nor can they provide data on the degraded performance of wire and insulation (as indicated by variation from some manufacturer established or observed baseline.) This data will only be available from a complementary FAA-funded effort involving enhanced *in situ* testing and tear-down.

Approach: Working in conjunction with the ATA and with the support of the Navy and Air Force, the FAA will sponsor and oversee supplemental non-destructive and destructive testing on interconnect system components identified by the Intrusive Inspection Working Group's inspection teams. Tests may include:

- impedance spectroscopy, time domain reflectometry
- TEM, SEM, optical microscopy
- microhardness, indentation creep, abrasion and cut-through testing
- analytical chemical analysis

The ATA has tentatively identified several candidate aircraft. Candidate aircraft will be selected in a way which ensures that all program-significant wire types and installation environments are adequately examined. Program-significant wire types include aromatic polyimide, Poly-X, PVC/Nylon/Glass, and the class of materials defined by Mil Std 81044/6.

Though there is no need to represent all aging aircraft models in this effort, application areas identified by the ASTF for the non-intrusive inspections will be the basis on which to found the intrusive inspections:

- Working Group inspectors will perform inspections similar to ASTF non-intrusive inspections. These inspections will involve fewer aircraft, but may be more aggressive.
- These inspections will be followed by complementary non-destructive inspection and testing of the same installations a) to verify findings and b) to verify the absence of other conditions.
- Other installations not selected for examination in the ASTF non-intrusive project will be selected and tested to verify presumptions about these installations.