

DAMPING TREATMENTS FOR AIRCRAFT HARDMOUNTED ANTENNAE

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ABSTRACT

The Air Force Wright Research and Development Center's Aircraft Integral Damping Demonstration Program is being conducted by LTV to illustrate the advantages of incorporating damping into aircraft structure during the design phase of development. The present study deals with the important Band 6, 7, 8 antennae packages on the B-1B Aft Equipment Bay, where equipment failures are routinely occurring during take-off maneuvers at maximum afterburner throttle settings. That damage results from the intense vibroacoustical environment generated by the four three-stage afterburning engines. Failure rates have been sufficiently high to warrant a departure from the basic study to develop a "quick fix" solution involving add-on damping treatments, that can be installed in a short time with minimal modification to the existing structure.

The approach used in this program was to analyze operating ground test data that were generated on the antennae components, in conjunction with analytical models. Modal testing identified areas where damping treatments could be applied to reduce the resonant effects of the local system. Various treatments were developed, analyzed, and tested *in situ* on the aircraft. Thus, a cost effective and technically viable solution to acoustically induced failures was achieved.

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