

FLUCTUATING PRESSURE FLOW LEVELS ON AIRCRAFT EXTERNAL SURFACES

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Introduction

The purpose of this paper is to present data for boundary layer noise as measured on the surface of aircraft skin.

Boeing 737

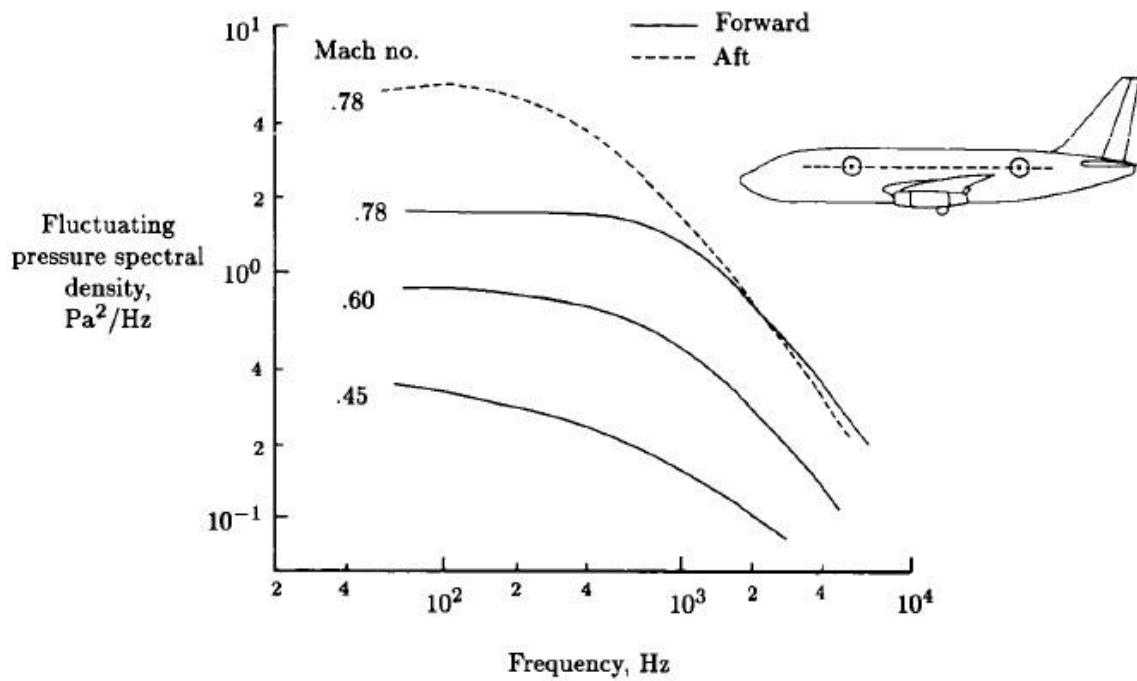


Figure 1.

The data in Figure 1 is taken from Reference 1.

F-15 Fighter

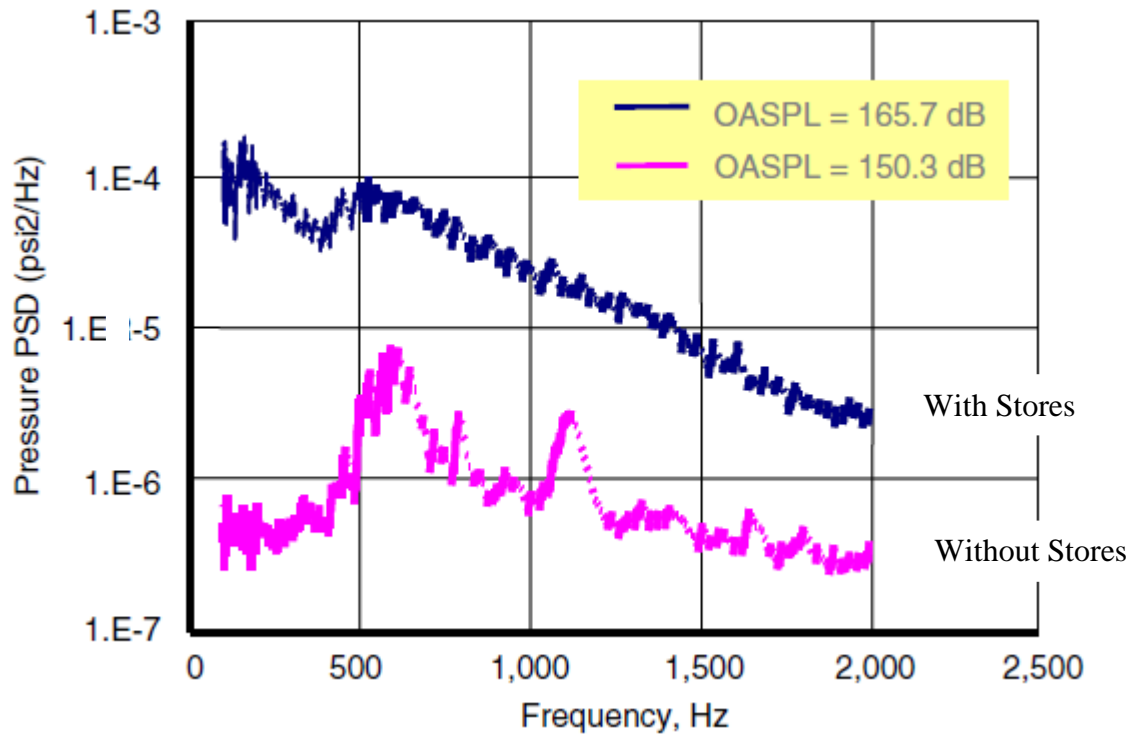


Figure 2. Incident Sonic Spectrum, With and Without Stores, Typical Acoustic Loads

The data in Figure 2 is taken from Reference 2. The data was measured on an F-15 fuselage skin.

High performance aircraft that fly aggressive low altitude or high-angle of attack maneuvers will experience high acoustic loading, especially in the presence of external stores. These high acoustic loads can lead to rapid sonic fatigue in thin gage metallic structure.

References

1. NASA Reference Publication 1258, Vol. 2, WRDC Technical Report 90-3052, Acoustics of Flight Vehicles: Theory and Practice, 1991.
2. S. Liguore & T. Beier, Recognition and Correction of Sonic Fatigue Damage in Fighter Aircraft, (SM) 33-1.