CORRELATION OF A COMPUTER CODE FOR PREDICTING NUCLEAR BLAST AIRLOADS ON A HIGHLY SWEPT WING WITH DATA FROM BLAST TESTS AT THE HAFB SLED TRACK

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The linear doublet-lattice method employed in aircraft gust analysis work had been formulated into a nuclear blast response code, VIBRA-6, for swept-wing aircraft. Blast-induced airloads predicted by the method are compared here with pressure differentials measured at 20 locations oil a 65 deg-sweepback wing during three blast intercepts conducted at the. 50,788-ft sled track located at tile. Holloman Air Force Base, NM. Incident shock overpressures in tile tests varied from 2 to 4 psi with blast intercept angles of about 20, 90 and 135 degrees from head-on. The comparisons are examined for both the diffraction and post-diffraction phases of the intercepts. The effect of the shock strength and the intercept angles. oil the loadings and the comparison is analyzed.

Significant underpredictions of the loading are observed for the post-diffraction period that are attributed to the development of a strong, vortex oil tile lee side of tile wing. Underpredictions by 50 percent or more are observed for this linear methods The measured loadings are observed to decay Much more slowly than the blast-induced angle of attack or the doublet-lattice predictions, tending to increase further the underpredictions of structural response. for blast yields that Would be small.