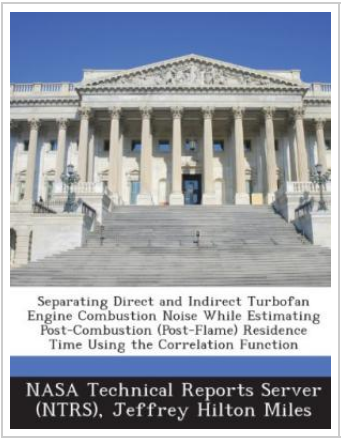

Separating Direct and Indirect Turbofan Engine Combustion Noise While Estimating Post-Combustion (Post-Flame) Residence Time Using the Correlation Fun

By Jeffrey Hilton Miles

Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 32 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.A previous investigation on the presence of direct and indirect combustion noise for a full-scale turbofan engine using a far-field microphone at 130 is extended by also examining signals obtained at two additional downstream directions using far-field microphones at 110 deg and 160 deg. A generalized cross-correlation function technique is used to study the change in propagation time to the far field of the combined direct and indirect combustion noise signal as a sequence of low-pass filters are applied. The filtering procedure used produces no phase distortion. As the low-pass filter frequency is decreased, the travel time increases because the relative amount of direct combustion noise is reduced. The indirect combustion noise signal travels more slowly because in the combustor entropy fluctuations move with the flow velocity, which is slow compared to the local speed of sound. The indirect combustion noise signal travels at acoustic velocities after reaching the turbine and being converted into an acoustic signal. The direct combustion noise is always propagating at acoustic velocities. The results show that the estimated indirect combustion noise time delay values (post-combustion residence...

Reviews

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