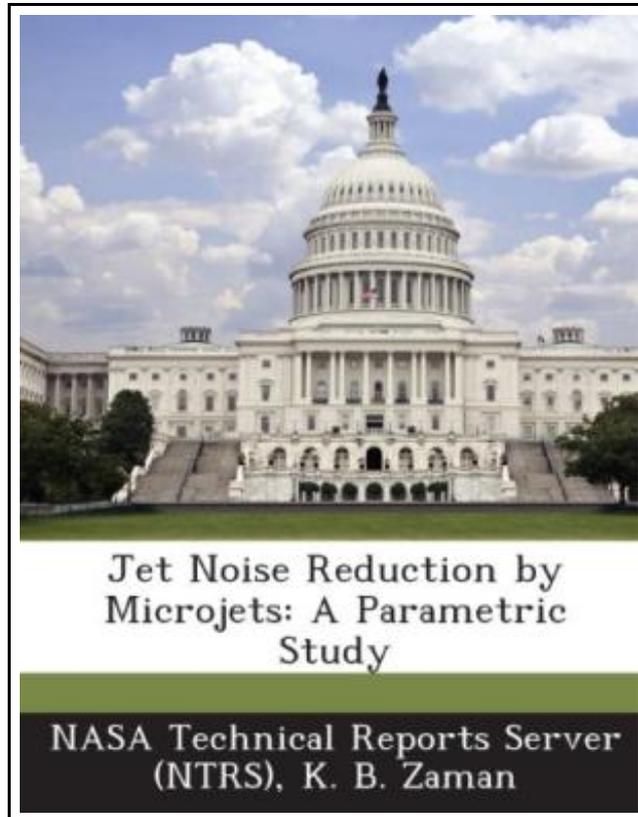


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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The effect of injecting tiny secondary jets (microjets) on the radiated noise from a subsonic primary jet is studied experimentally. The microjets are injected on to the primary jet near the nozzle exit with variable port geometry, working fluid and driving pressure. A clear noise reduction is observed that improves with increasing jet pressure. It is found that smaller diameter ports with higher driving pressure, but involving less thrust and mass fraction, can produce better noise reduction. A collection of data from the present as well as past experiments is examined in an attempt to correlate the noise reduction with the operating parameters. The results indicate that turbulent mixing noise reduction, as monitored by OASPL at a shallow angle, correlates with the ratio of jet to primary jet driving pressures normalized by the ratio of corresponding diameters ( $p_d/p_jD$ ). With gaseous injection, the spectral amplitudes decrease at lower frequencies while an increase is noted at higher frequencies. It is apparent that this amplitude crossover is at least partly due to shock-associated noise from the underexpanded jets themselves. Such crossover is not seen with water injection since the flow in that case is incompressible and there is no shock-associated noise. Centerline velocity data show that larger noise reduction is accompanied by faster jet decay as well as significant reduction in turbulence intensities. While a physical understanding of the dependence of noise reduction on  $p_d/p_jD$  remains unclear, given this correlation, an analysis explains the observed dependence of the effect on various other parameters. This item ships from La Vergne, TN. Paperback.



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