

## Reply by the Authors to H. S. Ribner

James R. DeBonis\*  
*NASA John H. Glenn Research Center,  
 Cleveland, Ohio 44135*

and

James N. Scott†  
*The Ohio State University, Columbus, Ohio 43210*

**W**E would like to thank Professor Ribner for his comments on our large-eddy simulation (LES) work and its extension to Lighthill's theory of jet noise. He gave insight into extending

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\*Aerospace Engineer, Nozzle Branch, 21000 Brookpark Road, MS 86-7, Senior Member AIAA.

†Associate Professor, Department of Aerospace Engineering and Aviation, Associate Fellow AIAA.

our analysis to compute the noise from the turbulent structures and also provided several valuable references. The purpose of our work was to demonstrate the ability of an unsteady computational-fluid-dynamics calculation to capture the turbulent structures that generate noise. We viewed this as the first step toward the analysis outlined by Dr. Ribner. We agree that the next step is to extend the simulation to compute all of the terms of necessary for the acoustic analysis. We are currently computing the flowfield of a Mach 0.9 jet. Instantaneous "snapshots" of the entire flowfield will be stored for subsequent detailed interrogation. This new jet configuration was chosen to match a recently obtained data set at NASA Glenn Research Center that contains both detailed two-point turbulence measurements, via particle image velocimetry and far-field acoustic measurements. The experimenters plan to present these data at the 2003 AIAA/CEAS Aeroacoustics Meeting. Because the acoustics are dependent on the correct resolution of the turbulent structures, a primary goal of this new analysis is to improve on the accuracy of the flowfield computation. Although the previous LES calculation represented an advance in accuracy, there is still much room for improvement. We feel that the combination of unsteady Navier-Stokes computations and Lighthill's theory can provide important insight into the mechanisms that generate jet noise and would encourage additional work in this area.

W. J. Devenport  
*Associate Editor*