Research on Supersonic Inlet Bleed

By David O. Davis

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback, 34 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Phase I data results of the Fundamental Inlet Bleed Experiments project at NASA Glenn Research Center (GRC) are presented which include flow coefficient results for two single-hole boundary-layer bleed configurations. The bleed configurations tested are round holes at inclination angles of 90° and 20° both having length-to-diameter ratios of 2.0. Results were obtained at freestream Mach numbers of 1.33, 1.62, 1.98, 2.46, and 2.92 and unit Reynolds numbers of 0.984, 1.89, and 2.46 10⁷m. Approach boundary-layer data are presented for each flow condition and the flow coefficient results are compared to existing multi-hole data obtained under similar conditions. For the 90° hole, the single and multi-hole distributions agree fairly well with the exception that under supercritical operation, the multi-hole data chokes at higher flow coefficient levels. This behavior is also observed for the 20° hole but to a lesser extent. The 20° hole also shows a markedly different characteristic at subcritical operation. Also presented are preliminary results of a Computational Fluid Dynamics (CFD) analysis of both configurations at the Mach 1.0...