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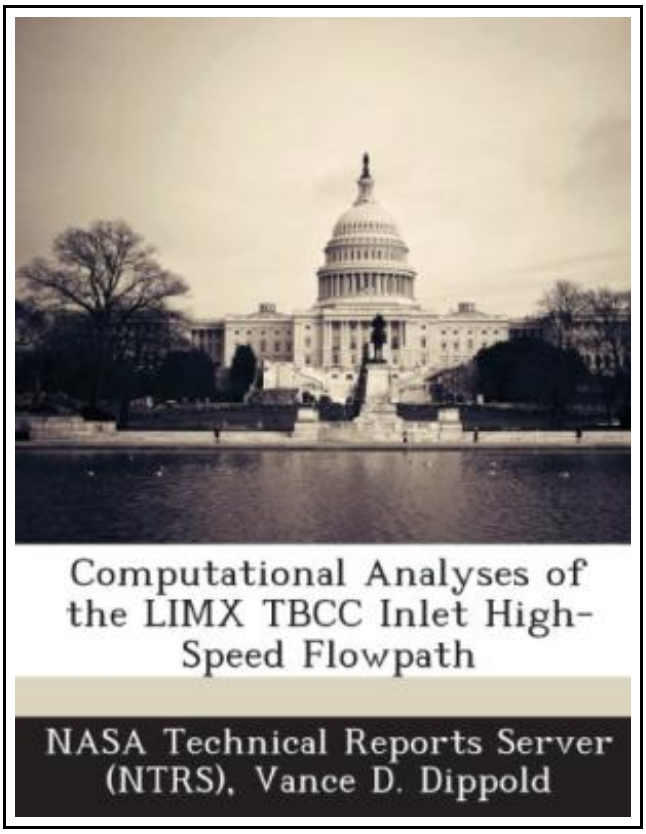

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COMPUTATIONAL ANALYSES OF THE LIMX TBCC INLET HIGH-SPEED FLOWPATH

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 38 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Reynolds-Averaged Navier-Stokes (RANS) simulations were performed for the high-speed flowpath and isolator of a dual-flowpath Turbine-Based Combined-Cycle (TBCC) inlet using the Wind-US code. The RANS simulations were performed in preparation for the Large-scale Inlet for Mode Transition (LIMX) model tests in the NASA Glenn Research Center (GRC) 10- by 10-ft Supersonic Wind Tunnel. The LIMX inlet has a low-speed flowpath that is coupled to a turbine engine and a high-speed flowpath designed to be coupled to a Dual-Mode Scramjet (DMSJ) combustor. These RANS simulations were conducted at a simulated freestream Mach number of 4. 0, which is the nominal Mach number for the planned wind tunnel testing with the LIMX model. For the simulation results presented in this paper, the back pressure, cowl angles, and freestream Mach number were each varied to assess the performance and robustness of the high-speed inlet and isolator. Under simulated wind tunnel conditions at maximum inlet mass flow rates, the high-speed flowpath pressure rise was found to be greater than a factor of four. Furthermore, at a simulated freestream Mach number of 4. 0, the high-speed flowpath and isolator showed stability for freestream Mach number that drops 0. 1 Mach below the design point. The RANS simulations indicate the yet-untested highspeed inlet and isolator flowpath should operate as designed. The RANS simulation results also provided important insight to researchers as they developed test plans for the LIMX experiment in GRC s 10- by 10-ft Supersonic Wind Tunnel. This item ships from La Vergne,TN. Paperback.

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