



Aerothermodynamic Testing of the  
Crew Exploration Vehicle in the LaRC  
20-Inch Mach 6 and 31-Inch Mach 10  
Tunnels

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## Aerothermodynamic Testing of the Crew Exploration Vehicle in the Larc 20-Inch Mach 6 and 31-Inch Mach 10 Tunnels

By Karen T. Berger

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. An experimental wind tunnel program is being conducted in support of a NASA wide effort to develop a Space Shuttle replacement and to support the Agency's long term objective of returning to the Moon and Mars. This article documents experimental measurements made on several scaled ceramic heat transfer models of the proposed Crew Exploration Vehicle Crew Module. The experimental data highlighted in this article are to be used to assess numerical tools that will be used to generate the flight aerothermodynamic database. Global heat transfer images and heat transfer distributions were obtained over a range of freestream Reynolds numbers and angles of attack with the phosphor thermography technique. Heat transfer data were measured on the forebody and afterbody and were used to infer the heating on the vehicle as well as the boundary layer state on the forebody surface. Several model support configurations were assessed to minimize potential support interference. In addition, the ability of the global phosphor thermography method to provide quantitative heating measurements in the low temperature environment of the capsule base region was assessed. While naturally fully...



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