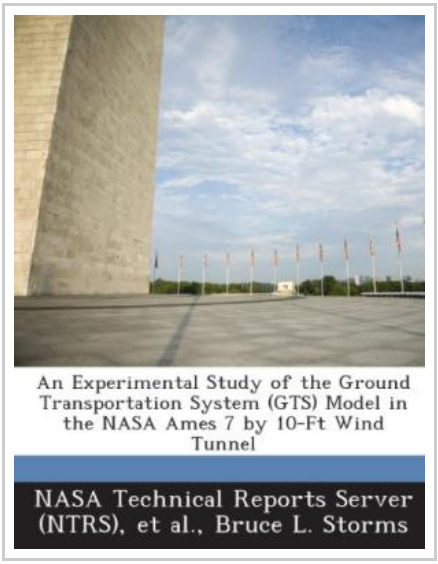

An Experimental Study of the Ground Transportation System (Gts) Model in the NASA Ames 7 by 10-FT Wind Tunnel

By Bruce L. Storms

Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.The 18-scale Ground Transportation System (GTS) model was studied experimentally in the NASA Ames 7- by 10-Ft Wind Tunnel. Designed for validation of computational fluid dynamics (CFD), the GTS model has a simplified geometry with a cab-over-engine design and no tractor-trailer gap. As a further simplification, all measurements of the GTS model were made without wheels. Aerodynamic boattail plates were also tested on the rear of the trailer to provide a simple geometry modification for computation. The experimental measurements include body-axis drag, surface pressures, surface hot-film anemometry, oil-film interferometry, and 3-D particle image velocimetry (PIV). The wind-averaged drag coefficient with and without boattail plates was 0. 225 and 0. 277, respectively. PIV measurements behind the model reveal a significant reduction in the wake size due to the flow turning provided by the boattail plates. Hot-film measurements on the side of the cab indicate laminar separation with turbulent reattachment within 0. 08 trailer width for zero and - 10 degrees yaw. Oil film interferometry provided quantitative measurements of skin friction and qualitative oil flow images. A complete set of the experimental data...

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