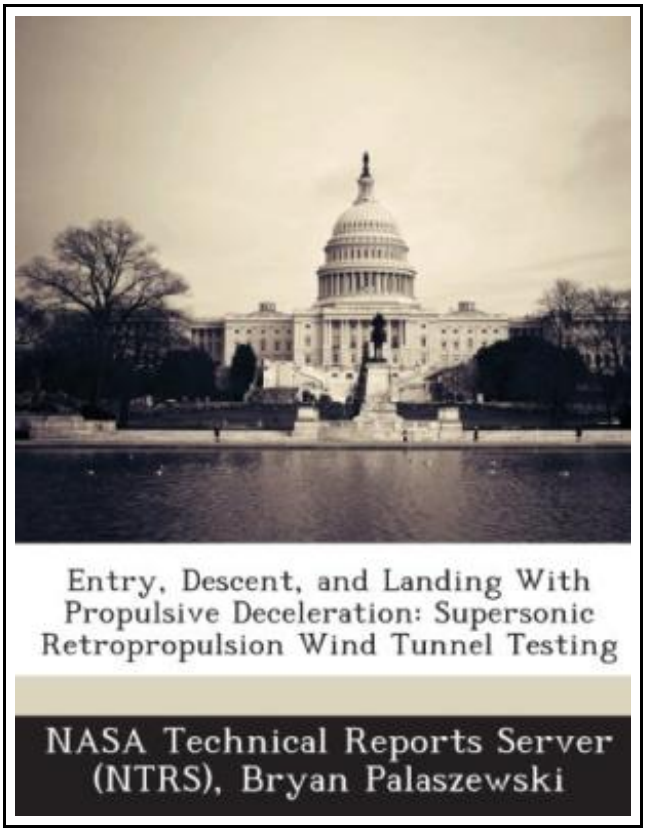
Entry, Descent, and Landing with Propulsive Deceleration: Supersonic Retropropulsion Wind Tunnel Testing



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ENTRY, DESCENT, AND LANDING WITH PROPULSIVE DECELERATION: SUPERSONIC RETROPROPULSION WIND TUNNEL TESTING

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 36 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.The future exploration of the Solar System will require innovations in transportation and the use of entry, descent, and landing (EDL) systems at many planetary landing sites. The cost of space missions has always been prohibitive, and using the natural planetary and planet s moons atmosphere for entry, descent, and landing can reduce the cost, mass, and complexity of these missions. This paper will describe some of the EDL ideas for planetary entry and survey the overall technologies for EDL that may be attractive for future Solar System missions. Future EDL systems may include an inflatable decelerator for the initial atmospheric entry and an additional supersonic retro-propulsion (SRP) rocket system for the final soft landing. As part of those efforts, NASA began to conduct experiments to gather the experimental data to make informed decisions on the best EDL options. A model of a three engine retro-propulsion configuration with a 2. 5 in. diameter sphere-cone aeroshell model was tested in the NASA Glenn 1- by 1-Foot Supersonic Wind Tunnel (SWT). The testing was conducted to identify potential blockage issues in the tunnel, and visualize the rocket flow and shock interactions during supersonic and hypersonic entry conditions. Earlier experimental testing of a 70 Viking-like (sphere-cone) aeroshell was conducted as a baseline for testing of a supersonic retro-propulsion system. This baseline testing defined the flow field around the aeroshell and from this comparative baseline data, retro-propulsion options will be assessed. Images and analyses from the SWT testing with 300- and 500-psia rocket engine chamber pressures are presented here. The rocket engine flow was simulated with a non-combusting flow of air. This item ships from La Vergne,TN. Paperback.

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