(6) TWO-PHASE (GAS-PARTICLE) FLOW THROUGH ROCKET NOZZLES

AN ANNOTATED BIBLIOGRAPHY OF RECENT REPORTS

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G. F. Carrier, Shock waves in a dusty gas. Journal of Fluid Mechanics, Vol. 4, 1958.
The flow of a dust-gas mixture is analyzed. The problem is reduced to a form such that the analysis can be completed by the integration of a first-order non-linear differential equation and a quadrature.

R. F. Hoglund, Recent advances in gas-particle nozzle flows. ARS Journal, Vol. 32, May 1962. ARS Paper 2331-62.
Performance loss in rocket motors caused by condensed metal-oxide combustion products is analyzed. A description of various studies is given along with a list of problems yet to be solved. A bibliography of 72 references is included.

M. Gilbert et al, Velocity lag of particles in linearly accelerated combustion gases. Jet Propulsion, Vol. 25, 1955.
The behavior of solid particles tracking combustion gases is studied. Particles lag appreciably in the reaction zone. Calculation shows that in a rocket motor a three percent loss in specific impulse can be caused by these particles.

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A summary of the studies conducted at United Technology Corp. on gas particle flow.

Donald J. Carlson, Experimental determination of thermal lag in gas-particle nozzle flo
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Studies of rocket motor designs based on the effects of flow of gases and particles through nozzles.

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