ternal circuitry for processing of the anemometer readout, one need only insert the plug in the socket.

In operation, the cantilever end of the stainless-steel housing is mounted flush with an engine wall and the unclamped portion of the cantilever is exposed into the flow. The cantilever is deflected in direct proportion to the force induced by component of flow parallel to the engine wall and perpendicular to the broad exposed face of the cantilever. The maximum strain on the cantilever occurs at the clamped edge and is measured by the piezoresistors, which are located there. The corresponding changes in resistance manifest themselves in the output of the Wheatstone bridge.

This work was done by Robert S. Okojie, Gustave Fralick, and George J. Saad of **Glenn Research Center**. *Further information is contained in a TSP (see page 1).*

Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Commercial Technology Office, Attn: Steve Fedor, Mail Stop 4–8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-17222.

Inlet Housing for a Partial-Admission Turbine

The housing is shaped to smooth the inlet flow.

Marshall Space Flight Center, Alabama

An inlet housing for a partial-admission turbine has been designed to cause the inlet airflow to make a smooth transition from an open circular inlet to an inlet slot. The smooth flow is required for purposes of measuring inlet flow characteristics and maximizing the efficiency of the turbine.

A partial-admission turbine is a turbine in which the inlet slot occupies less than a complete circle around the rotor axis. In this case, the inlet slot occupies a 90° arc. The present special inlet-housing design is needed because the "bull nose" shape of a conventional turbine inlet housing fails to provide the required smooth transition in a partial-admission configuration and thereby gives rise to a loss of turbine efficiency and inaccuracies in inlet flow measurements.

Upon entering the inlet housing through the circular opening, the flow encounters a "tongue"-shaped passageway, which serves as a ramp that diverts the flow to the first of two straight passages. This first passageway occupies a 90° arc and has a length equal to two passage heights. Instrumentation rakes for measuring the characteristics of the inlet flow are installed in this passageway.

Just past the first straight passageway is the second one, which is narrower and leads to the 90° turbine inlet slot. This passageway is used to smooth the flow immediately prior to its passage through the turbine inlet slot. The length of this second passageway equals the length of the chord of a turbine vane.

The inlet housing incorporates small ports for measuring static pressures at various locations of the flow, and incorporates bosses for the installation of the instrumentation rakes. The inlet housing also includes a flange at its inlet end for attachment to a circular inlet duct and a flange at its outlet end for attachment to the outer casing of the turbine.

This work was done by Ralph Moye, William Myers, and Kevin Baker of **Marshall Space Flight Center.** *Further information is contained in a TSP (see page 1).*
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