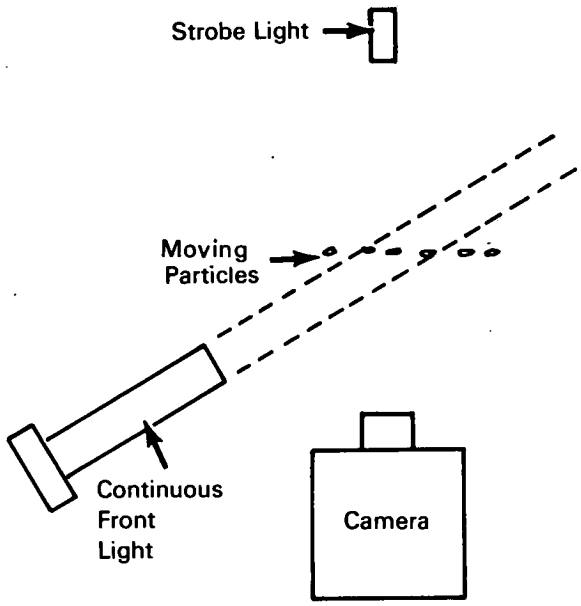
December 1966 Brief 66-10668

# NASA TECH BRIEF



## Photographic Method Measures Particle Size and Velocity in Fluid Stream




**The problem:**

To devise a means of determining the size and velocity (in the range from Mach 0.5 to 1.0) of small particles in nonturbulent fluid streams.

**The solution:**

A method employing a nonframing motion picture camera, a continuous front light source, and a strobe light.

**How it's done:**

The optical axis of the camera is positioned at right angles to the stream flow. A continuous light source is placed to illuminate the front of the stream, and a strobe light is placed on the opposite side of the stream.

When a particle illuminated by the continuous light source moves across the camera lens, a light streak or velocity trace is produced on the moving film. The strobe light produces an image or shadow of the particle at regular time intervals on the velocity trace on the film. The velocity of the particle is calculated from the known film travel speed and the slope of the trace on the developed film. The size and shape of the particle at the calculated velocity are determined by measurement of the particle image produced by the strobe light, taking into account the geometrical relationships of the system.

(continued overleaf)

**Notes:**

1. This method of measurement should be of interest in the study of the motion of solid and liquid particles in research and industrial fluid flow systems.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B66-10668

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: R. A. Dickerson
of North American Aviation, Inc.
under contract to
Marshall Space Flight Center
(M-FS-1536)