

EXPERIMENTAL EVALUATION OF THE  
LIDAR TECHNIQUE FOR DETERMINING  
SLANT VISUAL RANGE

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ABSTRACT

An experiment specifically designed to more precisely evaluate the lidar technique for determining horizontal and slant range visibility was conducted at Travis AFB, California during January 1973. The primary instruments were the SRI Mark IX pulsed ruby lidar and four transmissometers. The transmissometers were installed on towers and aligned along horizontal and slant paths. The lidar atmospheric measurements were made along paths adjacent to the sampling volumes of the transmissometers. Meteorological range ( $V_2$ ) was computed from the lidar observations using the "slope" method and the "analytic solution" method.

The lidar and transmissometer data were compared for three separate fog episodes. Results of these comparisons are presented and the applicability of the analysis methods is discussed. The observed effects of multiple scatter on the lidar return signals are compared to theoretical computations of these effects. It is concluded that the lidar technique has good potential for use as a practical system for the determination of slant visual range for aircraft landing operations.