

RESPONSE ANALYSIS OF THE FLOW-INDUCED VIBRATION
OF FLEXIBLE CYLINDERS TESTED AT CASTINE, MAINE
IN JULY AND AUGUST OF 1981

by

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15 January 1983

ABSTRACT

A cable-strumming experiment was conducted at Castine, Maine in July and August of 1981. 75-foot long sections of a 1.25-inch diameter cable, and a 1.631-inch diameter pipe were subjected to vortex induced vibration. Seven biaxial pairs of accelerometers were placed at different locations along the cable, and the pipe. Acceleration at these seven positions, as well as tension, tidal current velocity, and drag force were simultaneously recorded. Current velocities ranged from 0 to 2.4 feet/second. A numerical double integration technique is presented in detail and used to obtain the transverse and in-line displacements. Modal identification is used to evaluate the motion in terms of the individual natural modal coordinates of the cable. Lockin and non-lockin examples are presented. Cross flow amplitudes are typically twice that of the in-line vibration. In-line response frequencies are typically twice that of the cross flow.