



ANCO REPORT 1354.14

DEVELOPMENT OF A DEVICE FOR REDUCTION OF SEVERE DYNAMIC LOADS IN ELECTRIC TRANSMISSION TOWERS

ABSTRACT

A program sponsored by the U.S. Department of energy and monitored by Bonneville Power Administration (BPA) under the Small Business Innovation Research program has developed a Tower Load Controller (TLC) which limits the force transferred by a conductor suspension to an electric transmission tower during a severe dynamic event (storms, wind, ice load shedding, tornadoes, aircraft impact, insulator string failure, stringing accidents, vandalism, conductor break, etc.) The TLC is a compact long stroke energy absorber normally connected between the tower and the top of the insulator string. A series of model and full-scale tests were performed to evaluate TLC performance. The full-scale tests, conducted on a 345-kV line at the Electric Power Research Institute's Transmission Line Mechanical Research Center, involved conductor break tests with and without TLCs. These tests showed that the TLC significantly reduces tower loads and resulting tower damage. This report documents the TLC development and subsequent test efforts. Additional technical and economic studies are presented to assess TLC usefulness.

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E P R I

TRANSMISSION LINE MECHANICAL
RESEARCH CENTER

TEST REPORT

RP 1717-89

TLMRC TEST NO. 41

Broken Conductor Tests of ANCO/DOE Load Limiters

for

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