FIBER OPTIC CABLE DIG-UPS: CAUSES AND CURES

Daniel E. Crawford
President - Network Services
MCI Telecommunications Corporation
1801 Pennsylvania Ave., NW
Washington, D. C. 20006
(202) 887-2235

A

Table of Contents

A

A

List of Figures

A

FIBER OPTIC CABLE DIG-UPS - CAUSES AND CURES

Mr. Dan Crawford
President, Network Services
MCI Telecommunications Corporation
1801 Pennsylvania Avenue
Washington, D.C. 20006

1. Executive Summary

1.1 Overview and key messages.

As sub-committee member on NOREST, the Fiber Cable Focus Group collected and analyzed industry data concerning service interruptions resulting from cable failures caused by dig-ups. The Group also reviewed the practices of other utility companies and outside groups such as "one-call" associations. Through these activities and a statistical analysis of industry data, the Group has determined that several primary activities can mitigate or certainly reduce cable dig-ups.

Fiber optic cables, whose size is often less than one inch in diameter, routinely carry tens of thousands of telephone calls over glass strands slightly more thick than a human hair. Damage to fiber optic cables can shut down vital communications links to airports, emergency services, and nuclear power facilities. With advances in SONET transmissions and ATM switching technologies comes higher and higher concentrations of traffic placed on fiber cables. Therefore, protecting these vital "information highways" takes on ever increasing significance. To improve the reliability of these critical high capacity links, the Network Reliability Council's Fiber Cable Focus Group collected and analyzed fiber cable failure data, surveyed existing utility damage prevention legislation and held discussions with key representatives of the damage prevention industry.

Based on these findings and discussions, the Group recommends: 1) a strengthening of utility damage prevention legislation - call-before-you-dig enhancement, 2) broad and uniform implementation of "Best Practices" to minimize cable damage - standardized practices and procedures, and 3) endorsement of a benchmarking study - to identify innovative approaches to fiber cable damage prevention and/or assess the need to revise existing practices.

Damage Prevention Legislation

Dig-ups are the largest cause of fiber cable failures and account for nearly 60% of the failures reported by the industry. Examining the root causes of fiber cable dig-ups reveals that 33% of reported dig-ups resulted from the excavators' failure to notify the facility owner before digging started. Although over 40 states have damage prevention laws requiring such prior notification, the laws are generally weak, not adequately enforced, and provide little provision for punitive damages in the event of excavator negligence. Therefore, the Group recommends enforcement, enactment, and/or revision of federal, state, and local damage prevention laws. Paragraph 9.1 of this paper details the intent of this legislation.

Best Practices

Strong damage prevention legislation is essential for reducing the number of cable dig-ups. However, 40% of the reported dig-ups occurred in spite of prior notification by the excavator, accurate cable location, and proper temporary marking of the sub-surface cable route. Therefore, in addition to recommending strengthened damage prevention legislation, the Group has identified a compilation of best practices as procedures which, if uniformly complied with and broadly implemented, can be effective in minimizing occurrences of fiber cable

A