SOFTWARE FOR THE DESIGN AND ANALYSIS OF COLLISION TOLERANT PILE STRUCTURES

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ABSTRACT

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A Collision Tolerant Pile Structure (CTPS) is a compliant, hinged structure designed to carry Aids to Navigation (ATC's) in shallow navigable shipping channels subject to heavy barge traffic. The project goal is to develop a software package to serve as a tool for full scale CTPS design based on site specific conditions. The software runs on MS-DOS, is interactive and menu driven, and utilizes the LOTUS 123 spreadsheet.

The program includes recent design changes including an improved spring configuration and the addition of a buoyant section. The CTPS dynamics are simulated for the collision, recovery, and storm conditions. Typical model inputs include wave height, current velocity, water depth, and barge draft, speed, freeboard, and bow angle. Using site specific values in a generic model, based on Coast Guard specifications, parametric studies are readily performed.