



# Simplified Probabilistic Models for Concrete Dam Failure-Newmark and CorpsDamSlip

## Description

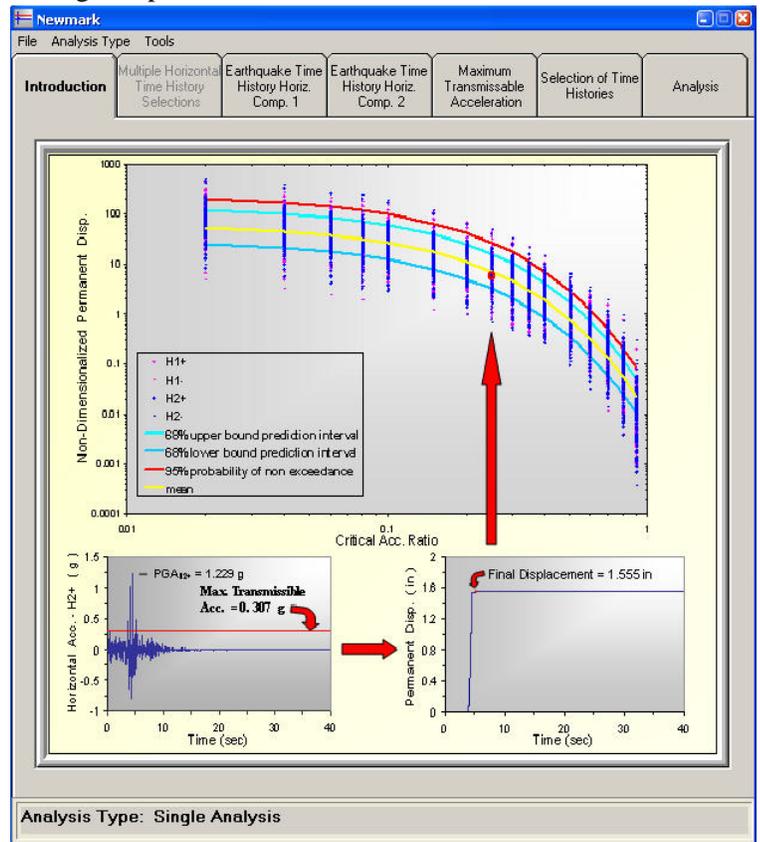
The PC-based software packages of Newmark and CorpsDamSlip are used in the permanent deformation analysis of rock-founded concrete gravity dams due to earthquake loading. Newmark is used to develop simplified permanent deformation analysis relationships for rock-founded structures using regression based methods of analysis that result in permanent deformation relationships that need only values for peak acceleration and peak velocity on rock. The resulting Newmark simplified permanent deformation relationships are then implemented in CorpsDamSlip and used for the seismic permanent deformation analysis of a site-specific concrete gravity dam. The latter software package, CorpsDamSlip, is used to construct system response curves for use in Portfolio Risk Assessments. Newmark and CorpsDamSlip have a user-friendly graphical user interface (GUI) for both input and viewing computed results.

## Benefits

Without Newmark and CorpsDamSlip, the U.S. Army Corps of Engineers has no method to compute the permanent seismically induced displacement of a rock-founded concrete gravity dam. This software is also used to produce system response curves (i.e., fragility curves) for use by Districts in their Portfolio Risk Assessments to prioritize the limited funds available for Corps projects.

## Status

Initial versions of Newmark and CorpsDamSlip have been created and demonstrated to the Corps' primary end users, District engineers, who have requested additions and



modifications. Newmark is in its final stages of development and the simplified permanent displacement relationships are being developed for the generation of system response curves. CorpsDamSlip is being modified to accept these relationships (created using Newmark) that are needed to generate system response curves and will be the tool used by District engineers to create system response curves.

**Distribution Source(s)**

Once Newmark and CorpsDamSlip have been completed, they will be available through the Computer-Aided Structural Engineering (CASE) Web site at: <http://case.wes.army.mil/>

**Available Documentation**

User's manuals and engineering documentation will be created once the software is completed.

**Available Training**

There is currently no separate training course scheduled based solely on using Newmark and CorpsDamSlip. However, arrangements are likely to be made in the future for training in using this software as the R&D program progresses.

**Available Support**

Support is available to all Corps employees. Corps users can either e-mail or call the Point of Contact with questions and/or comments.

**Application**

This software is unique to the Corps and has not yet been distributed.

**Point of Contact**

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**Partners**

N/A.

