

**Procedures for Soil Placement and Measuring Techniques for  
Centrifuge Blast Testing**

By

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## **ABSTRACT**

In the aftermath of the terrorist attacks on September 11, 2001 and the levee failures after hurricane Katrina, the vulnerability of the United States' levee system has become a major concern. The levee system is largely unprotected and is thus a potential target for a terrorist attack. The levee failures that followed hurricane Katrina raised awareness about the potentially deadly results of a catastrophic levee failure. The resulting floods could cause widespread property damage and loss of life.

Recently, the effect that the compaction of the soil in a levee has on the potential size of a blast crater has become an issue. This is due to the fact that many older levees were not compacted to modern day engineering standards, and may pose a different risk than the more modern levees.

It is not economical to do full scale testing of blasting on levees; therefore the use of centrifuge modeling has become a key tool for studying the effect of soil compaction on blast crater size.

This thesis focuses on the proper procedures for placing soil during the construction of the centrifuge test models. It also details the methods and techniques that should be used when measuring the blast craters.