USEFULNESS OF SPADE CORES FOR GEOTECHNICAL STUDIES AND SOME RESULTS FROM THE NORTHEAST PACIFIC

ROYAL HAGERTY

Deepsea Ventures, Inc.

ABSTRACT

The next best thing to in situ measurements of sediment engineering properties is probably data collected from cores taken with spade corers. Included in the discussion are the advantages and disadvantages of spade cores compared to conventional small-diameter cores.

The "undisturbed" nature of spade cores is also illustrated. Changes in temperature or storage in water for periods up to 7.5 months do not significantly alter the shear strength of the sediment.

Despite popular beliefs, pelagic sediments are not homogeneous over extended distances. Significant differences in shear strength occur even within the horizontal confines of a single spade core. These differences are ascribed to bioturbation. Drastically different strength characteristics also occur over distances of a mile or less due to different depositional histories. Characteristics of deep-ocean sediments may prove to be as variable as shelf sediments.

INTRODUCTION

For the past decade the major effort in equipment design for marine geotechnical studies has been directed towards development of in situ devices. The need for such devices for use in basic studies is beyond question, especially in lieu of laboratory or shipboard tests on cores obtained by conventional small-diameter cores. The high costs, complexity of operation, and ship time
Figure 1. An open spade corer in its sampling configuration