



Department of Petroleum Engineering
LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE
BATON ROUGE · LOUISIANA · 70803

504/388-5215

January 12, 1980

Dr. Robert Schiffman
Department of Civil Engineering
University of Colorado
Boulder, Colorado 80607

Dear Bob:

I have completed my review of the work done by Dr. Louis Thompson and his students on the U.S. Geological Survey sponsored research project on overpressured submarine sediments. As you requested, emphasis was placed on reviewing (1) Dr. Thompson's test procedure and test data and (2) the potential technology which can be developed by this project.

The stated purpose of Dr. Thompson's research is to develop a sediment consolidation theory applicable to the progressive burial of ocean bottom sediments which will predict the porosity of the sediments as a function of depth and time for various rates of deposition on the ocean bottom and various mineral compositions. The U.S. Geological Survey is interested in supporting this research because of its potential application in the prediction of formation pore pressure and hydrofracture pressure in shallow marine sediments during offshore drilling operations.

A pore pressure predictive technique in sediments having a depth of burial less than the depth at which surface casing is usually cemented in place is particularly important because prior to that time a well cannot be safely closed by the surface blowout preventer valves without risk of hydrofracture through the shallow sediments to the ocean floor and total loss of control. A hydrofracture predictive technique is also important in determining the optimum depth of the surface casing. At present, the U.S. Geological Survey usually requires that surface casing be cemented in place prior to penetrating more than 4500 ft into the sediments. The placement of additional deeper casing strings is also of great economic significance to the well operator, but is not as important from an environmental standpoint. Also, Dr. Thompson's work is directed more towards the shallow sediments where the diagenetic processes at work are more easily modeled in the laboratory.

The written documents submitted for review by Dr. Thompson included:

1. a summary document of recent work entitled "Soil and Rock Mineral Contact Areas Revisited"