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MEMORANDUM FOR: John T. Greeves, Section Leader  
High-Level Waste Technical  
Development Branch  
Division of Waste Management

FROM: Mysore S. Nataraja, Project Manager  
High-Level Waste Technical  
Development Branch  
Division of Waste Management

SUBJECT: TRIP REPORT, 24th U.S. SYMPOSIUM ON ROCK MECHANICS  
COLLEGE STATION, TEXAS

I attended the 24th U.S. Symposium on Rock Mechanics at College  
Station, Texas between June 20 and 23, 1983. Attached is a summary trip  
report covering the symposium.

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## TRIP REPORT

## 24th U. S. SYMPOSIUM ON ROCK MECHANICS

TEXAS A &amp; M UNIVERSITY

College Station, Texas

The 24th U. S. Symposium on Rock Mechanics was held at the Texas A & M University between June 20 and 23, 1983. The theme of the symposium was 'Theory-Experiment-Practice.' Simultaneously, the American Society for Testing Materials sponsored a one-day Symposium on the 'Measurement of Rock Properties at Elevated Temperatures and Pressures' on June 20, 1983. More than eighty papers were presented during three simultaneous sessions during the Symposium. Nine papers were presented during the ASTM sponsored symposium. Papers were presented by representatives from the academic institutions, research laboratories, consulting, and other institutions from within the country and abroad.

A field trip was arranged on the last day of the conference to a Lignite mine and a hydrofracture testing outfit. Only important points relevant to HLW management are summarized in this trip report.

The proceedings were classified into seven categories: (1) Analysis (eleven papers); (2) Construction (fourteen papers); (3) Field (thirteen papers); (4) Laboratory (eighteen papers); (5) Mining (nineteen papers); (6) Petroleum (six papers); and (7) Environment (five papers).

The abstracts of important papers from the two Symposia and a copy of the paper prepared by Engineers International and Nataraja are attached to this trip report. Also attached is a trip report prepared by the NRC contractor, Engineers International. One of the most important observations made during the conference is related to the study of Thermal-Mechanical-Hydrological-Chemical interaction. The technical opinions expressed generally implied that a complete understanding of the phenomena and experimental verifications of the theoretical predictions describing the interactions are very near to impossible. Understanding

of two-way couplings of Thermal-Mechanical, Thermal-Hydrological and three-way couplings of Thermal-Mechanical-Hydrological phenomena are within the state-of-the-art. Large-scale, long-term experiments can give meaningful results to make long-term predictions of the trends in the behavior of the host rock. However, the understanding of four-way coupling involving geochemical interaction needs to be studied in a simplified manner because of the highly complex and intractable nature of the real problem.