

**SEISMIC RESPONSE OF UNDERGROUND OPENINGS  
FOR HLW DISPOSAL**

**NRC PROJECT MANAGER: JACOB PHILIP PE**

**CONDUCTED BY: CENTER FOR NUCLEAR WASTE REGULATORY  
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**PRESENTATION TO  
NUCLEAR WASTE TECHNICAL REVIEW BOARD  
COMMITTEE FOR STRUCTURAL GEOLOGY AND GEOENGINEERING  
JANUARY 22, 1992  
IRVINE, CALIFORNIA**

# **SEISMIC ROCK MECHANICS RESEARCH PROJECT**

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## **OBJECTIVES:**

- **TO OBTAIN AN UNDERSTANDING OF THE IMPORTANT PARAMETERS ASSOCIATED WITH THE RESPONSE OF UNDERGROUND REPOSITORY STRUCTURES SUBJECTED TO REPETITIVE SEISMIC MOTIONS.**
- **TO STUDY THE POSSIBILITY OF SEISMIC PUMPING AND ITS SIGNIFICANCE ON THE LONG-TERM PERFORMANCE OF UNDERGROUND REPOSITORY STRUCTURES.**
- **TO DEVELOP METHODOLOGIES TO EVALUATE, VALIDATE, AND REDUCE UNCERTAINTIES IN THE PREDICTION MODELS USED IN SEISMIC ASSESSMENT OF JOINTED ROCK MEDIUM.**

## REGULATORY BASIS

### PRECLOSURE PERFORMANCE OBJECTIVES

- Releases of radioactive materials
- Retrievability

### PRECLOSURE DESIGN CRITERIA

- Protection against natural phenomena

### POSTCLOSURE PERFORMANCE OBJECTIVES

- Waste packages
- Radionuclide releases

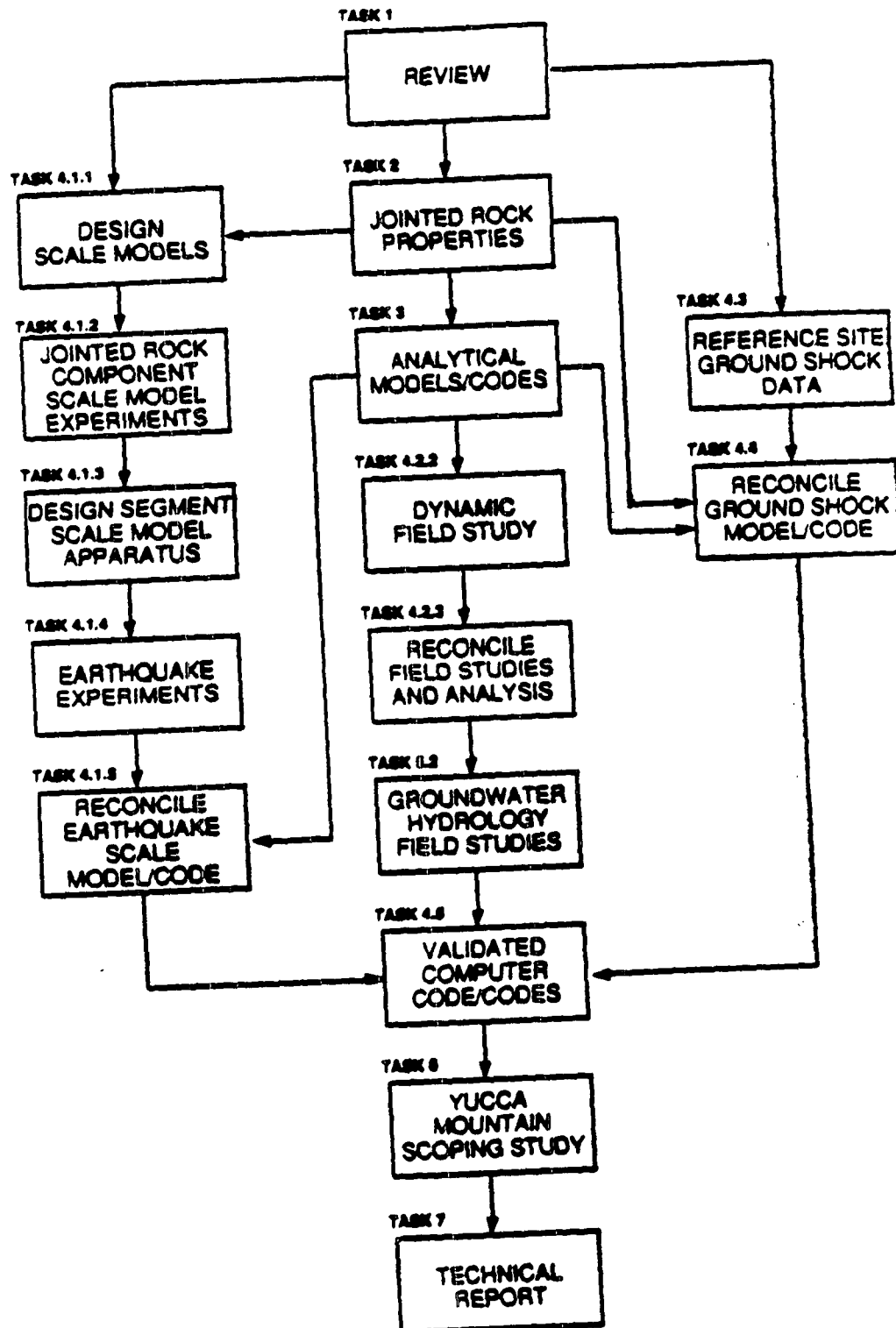
### INTEGRATED PERFORMANCE ASSESSMENTS

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- **TASK 1 - FOCUSED LITERATURE SEARCH**
- **TASK 2 - LABORATORY CHARACTERIZATION OF JOINTED ROCK**
- **TASK 3 - ASSESSMENT OF ANALYTICAL MODELS/COMPUTER CODES**
- **TASK 4 - ROCK DYNAMICS LABORATORY AND FIELD STUDIES AND CODE VALIDATION**
- **TASK 5 - GROUNDWATER HYDROLOGY FIELD STUDIES AND CODE VALIDATION**
- **TASK 6 - YUCCA MOUNTAIN SCOPING ANALYSIS**
- **TASK 7 - TECHNICAL RECOMMENDATIONS**

# LOGIC AND INTEGRATION OF PROJECT TASKS



## **PRODUCTS / SCHEDULES**

### **PRODUCTS**

- NUREG/CR 5440 LITERATURE SEARCH
- CODE QUALIFICATION STUDIES
- EIGHT PAPERS IN INTERNATIONAL CONFERENCES/ROCK MECHANICS SYMPOSIUMS
- QUARTERLY/ANNUAL TECHNICAL REPORTS
- TECHNICAL RECOMMENDATIONS/POSITIONS

### **SCHEDULE**

- PROJECT TIME FRAME - 1988-1994