

PACKAGE ID - 001251C017600 UTAH-2

KWIC TITLE - Thermoplastic Response in Anisotr Rock

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LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 06/01/1989 **PUBLICATION DATE** - 04/01/1983

DESCRIPTION - UTAH-2 is a two-dimensional, thermomechanical finite element program designed to analyze elastic, elastic-plastic, and elastic brittle response in anisotropic geologic media. Both constant strain triangles and quadrilateral elements composed of four constant strain triangles are used. The yield function for either elastic-plastic or elastic-brittle response is an extended von Mises criteria for the yield function considers the effects of confining pressure. UTAH-2 is able to consider temperature dependence of material properties. The elastic and plastic moduli as well as the thermal expansion coefficients can vary with temperature based on a polynomial fit of experimental data. UTAH-2 is intended for use in analyzing stress and displacement fields associated with repository excavation, canister emplacement, salt over short time periods and in other geological media for any time scale; for evaluating room stability and generating boundary conditions (stress fields) used in canister sleeve studies; for analyzing bedded sedimentary regions; and for sensitivity and stability studies where temperature dependence of material properties may be a factor.

PACKAGE CONTENTS - Media Directory; Software Abstract; ONWI-430; Media Includes Source Code, JCL and Control Information, Sample Problem Input and Sample Problem Output;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 3.5 Diskette

COMPUTER - CDC CYBER176

OPERATING SYSTEMS - NOS

PROGRAMMING LANGUAGES - ORTRAN-IV

SOFTWARE LIMITATIONS - UTAH-2 is not appropriate for use in fully three-dimensional problems and cannot be used for long-term studies in salt where creep deformation becomes dominant. UTAH-2 does not analyze creep behavior or take individual fractures into account.

SOURCE CODE AVAILABLE (Y/N) - Y

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UNIQUE FEATURES - UTAH-2 is intended for use in analyzing stress and displacement fields associated with repository excavation, canister emplacement, and repository backfilling. It can be used to analyze deformation in salt over short time periods and in other geologic media for any time scale; for evaluating room stability and generating boundary conditions (stress fields) used in canister sleeve studies; for analyzing bedded sedimentary regions; and for sensitivity and stability studies where temperature dependence of material properties may be a factor.

HARDWARE REQS - 46K words

REFERENCES - INTERA Environmental Consultants, Inc., UTAH-2: A Finite-Element Model for Simulating Thermoelastic-Plastic Behavior in Anisotropic Rock Masses, ONWI-430, April 1983.

ABSTRACT STATUS - Released tested 10/14/1998.

SUBJECT CLASS CODE - R

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
U CODES
DEFORMATION
FINITE ELEMENT METHOD
MECHANICAL PROPERTIES

EDB SUBJECT CATEGORIES -
990200

SPONSOR - NEA

PACKAGE TYPE - TESTED