

**PACKAGE ID** - 001250C017600 VISCOT

**KWIC TITLE** - Viscuous Mech Behavior of Rock Mass Under  
Therm Stress

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

**COMPLETION DATE** - 02/15/1990   **PUBLICATION DATE** - 04/10/1983

**DESCRIPTION** - VISCOT is a nonlinear, transient , thermal-stress, finite-element program designed to determine the viscoelastic, viscoplastic, or elastoplastic deformation of a rock mass due to mechanical and thermal loading. A major application of VISCOT in conjunction with a SCEPTER heat transfer code, e.g. DOT-BPMD, is the thermomechanical analysis of a rock mass such as salt in which significant time-dependent, nonlinear deformations are expected to occur. Such problems include room and canister scale studies during the excavation, operation, and long term, post closure stages in a salt repository.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; ONWI-437; Media Includes Source Code, Sample Problem Input and Output, auxiliary Information, JCL and Control Information;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 3.5 Diskette

**METHOD OF SOLUTION** - The numerical solution of the nonlinear incremental equilibrium equations is performed by using an explicit Euler time-stepping scheme. The rock mass may be modeled as a viscoplastic or viscoelastic material. The viscoplastic material model can be described by a Tresca, von Mises, Drucker-Prager, or Mohr-Coulomb yield criteria (with or without strain hardening) with an associated flow rule which can be a power or an exponential law. The viscoelastic material model is a temperature and stress dependent law which has been developed by Pfeifle, Mella gard, and Senseny specifically for salt rock masses. Site-specific parameters for this creep law at the Richton, Permian, Paradox, and Vacherie salt sites are given in the ONWI-314 report.

**COMPUTER** - CDC CYBER176

**OPERATING SYSTEMS** - NOS 1.4

**PROGRAMMING LANGUAGES** - FORTRAN-IV

**SOURCE CODE AVAILABLE (Y/N)** - Y

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**HARDWARE REQS** - 80K words and 12 I/O units.

**REFERENCES** - INTERA Environmental Consultants, Inc, VISCOT: A  
Two-Dimensional and Axisymmetric Nonlinear Transient  
Thermoviscoelastic and Thermoviscoplastic Finite-Element Code for  
Modeling Time-Dependent Viscuous Mechanical Behavior of a Rock  
Mass, ONWI-437, April 1983.

**ABSTRACT STATUS** - Released tested 10/14/1998.

**SUBJECT CLASS CODE** - R

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
V CODES  
DEFORMATION  
ELASTICITY  
FINITE ELEMENT METHOD  
MECHANICAL PROPERTIES

**EDB SUBJECT CATEGORIES** -  
990200

**SPONSOR** - NEA

**PACKAGE TYPE** - TESTED