

PACKAGE ID - 000139MLTPL00 NIKE3D96*

KWIC TITLE - Static & Dynamic Response of 3D Solids

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LIMITATION CODE -COPY **AUDIENCE CODE** - LIM

COMPLETION DATE - 02/01/1991 **PUBLICATION DATE** - 02/01/1991

DESCRIPTION - NIKE3D is a large deformations 3D finite element code used to obtain the resulting displacements and stresses from multi-body static and dynamic structural thermo-mechanics problems with sliding interfaces. Many nonlinear and temperature dependent constitutive models are available.

PACKAGE CONTENTS - Media Directory; Software Abstract; New Features in the MDG Codes; Installation Guides for SUN, IBM, and SGI; UCRL-MA-105268; Media Includes Source Code, Compilation Instructions, Linking Instructions;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD ROM

METHOD OF SOLUTION - NIKE3D uses Newton and Quasi Newton Raphson iterations within an implicit loop to solve the non-linear systems of equations. Its element library consists of 8 node hexahedrals, a number of 4 node shell, 2 node beam, discrete type and contact elements for its finite element discretization. It also performs dynamic analysis using Newmark's method for integration of the nodal accelerations and velocities, and eigenvalue analysis using subspace iteration based on the linear stiffness matrix. Temperature states for thermal analysis can be read from TOPAZ3D plots.

COMPUTER - MLT-PLTFM

OPERATING SYSTEMS - UNIX

PROGRAMMING LANGUAGES - FORTRAN and C

SOFTWARE LIMITATIONS - 99 file limits for binary scratch and graphics files.

SOURCE CODE AVAILABLE (Y/N) - Y

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UNIQUE FEATURES - Provides a number of non-linear solution techniques.

RELATED SOFTWARE - Pre-processors such as INGRID and post-processors such as TAURUS.

OTHER PROG/OPER SYS INFO - The DIGLIB code is included with the package. This package has improved slideline algorithms.

HARDWARE REQS - At least 17 megabytes of RAM.

TIME REQUIREMENTS - Highly problem dependent.

REFERENCES - B.N. Maker, R.M. Ferencz, and J.O. Hallquist, NIKE3D: A Nonlinear, Implicit, Three Dimensional Finite Element Code for Solid and Structural Mechanics, UCRL-MA-105268, January 1991\ J.O. Hallquist, NIKE3D: An implicit finite deformation, finite element code for analyzing the static and dynamic response of three dimensional solids, UCID-18822, Rev. 1, July 1984.

ABSTRACT STATUS - Submitted July 1996. Released screened 8/7/96

SUBJECT CLASS CODE - I

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
N CODES
THREE-DIMENSIONAL CALCULATIONS
STRUCTURAL BEAMS
SOLIDS
SHELLS
STRESS ANALYSIS

EDB SUBJECT CATEGORIES -
990200 420200

SPONSOR - DOE/DP

PACKAGE TYPE - SCREENED