PACKAGE ID - 000622U110700 TAP-LOOP

KWIC TITLE - Thermal Analysis of Closed Systems

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

COMPLETION DATE - 10/01/1987 **PUBLICATION DATE -** 10/01/1987

DESCRIPTION - TAP-LOOP is a finite-difference program designed for steady-state and transient thermal analysis of recirculating fluid loops and associated heat transfer equipment; however, it is not limited to loop analysis. TAP-LOOP was developed to perform scoping and conceptual design analyses for closed test loops in the Fast Flux Test Facility (FFTF), but it can handle a variety of problems which can be described in terms of potentials, sources, sinks, and storage including, in addition to heat transfer problems, studies of potential fluid flow, electrical networks, and stress analysis.

PACKAGE CONTENTS - Media Directory; Software Abstract; BNWL-1172; Media Includes Source Code;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD Rom

METHOD OF SOLUTION - TAP-LOOP employs a finite-difference approximation in which the problem is broken into mesh points each representing a small volume or node. Temperatures are then calculated depending on whether the analysis is steady-state or transient and whether the node contains fluid transport in addition to diffusion or diffusion only. Five types of nodes are provided: fluid flow nodes consisting of cathode follower and time-lagged nodes, constant-temperature nodes, zero capacitance and finite capacitance nodes. Heat transfer terms are calculated conventionally via conductances or admittances and potential differences.

COMPUTER - UNIVAC1107

OPERATING SYSTEMS - EXEC8

PROGRAMMING LANGUAGES - FORTRAN IV

SOFTWARE LIMITATIONS - Maxima of - 999 connections, 500 nodes, 100 nodes having latent heat

SOURCE CODE AVAILABLE (Y/N) - Y

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RELATED SOFTWARE - TAP-LOOP was derived from the TAP code developed at Atomics International. Stability improvements and transport lag times were incorporated to provide a more useful design tool for thermal analysis of closed hydraulics systems.

OTHER PROG/OPER SYS INFO -

HARDWARE REQS - 30 Kbytes of memory are required for execution on an UNIVAC1100/ 91.

TIME REQUIREMENTS - NEADB executed the sample problem in 2 CPU seconds on an UNIVAC1100/91.

REFERENCES - C.E. Leach and E.L. Kelly, Jr., TAP-LOOP: A Stable Thermal Analyzer Code for Thermal Analysis of Closed Hydraulic Systems, BNWL-1172, January 1970.

ABSTRACT STATUS - Abstract first distributed February 1988. UNIVAC1107 version submitted October 1987.

SUBJECT CLASS CODE - H

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
T CODES
THERMAL ANALYSIS
COOLANT LOOPS
FFTF REACTOR

EDB SUBJECT CATEGORIES -
990200 420400 220600 220200

SPONSOR - DOE/NE

PACKAGE TYPE - TESTED