

PACKAGE ID - 000349IBMPC01 BETA

KWIC TITLE - Brookhaven Event Tree Analyzer

AUTHORS - Shier, W.
Brookhaven National Lab., Upton, NY (United States)

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

COMPLETION DATE - 12/07/1992 **PUBLICATION DATE** - 05/01/1990

DESCRIPTION - BETA is the Brookhaven Event Tree Analyzer. BETA is used in Probabilistic Risk Assessment (PRA). Event trees are key elements in applying PRA in pre-conceptual design for safety enhancement of Oak Ridge National Laboratory's Advanced Neutron Source (ANS) research reactor which will be the world's best source of low-energy neutrons for material studies, physics research, transplutonium production and radiation research.

PACKAGE CONTENTS - User's Manual; Media Directory; Software Abstract;

SOURCE CODE INCLUDED? - No

MEDIA QUANTITY - 1 3.5 Diskette

METHOD OF SOLUTION - Event trees exhaustively explore the combinations of system failures that may follow from accident initiator through dendritic diagrams connecting initiator with plant damage state and by calculating the frequency of each accident sequence. They are the central element of PRA, but require supplementary text to relate the sequences to plant systems, explain the logic and state assumptions. These tasks are accomplished by the integration of a popular word processor and the event tree analysis code BETA. Using the word processor, the analyst writes text that describes each sequence to a depth deemed necessary and prepares an Event Table which indicates by symbols the operability of each system in the accident sequence and the judged fuel damage state. The matrix of symbols so formed is copied to another file, edited to remove spaces, additional information is added and the file is saved in ASCII format to provide input to BETA. BETA, which may be used for further editing, displays or plots on HP laser or Epson printer, the event tree specified by the event table logic and computes, displays and/or prints the end or intermediate state probabilities according to damage criteria. It also provides for changing nodal probabilities within the event tree according to the preceding sequences (binary conditionals).

COMPUTER - IBM PC

OPERATING SYSTEMS - DOS

PROGRAMMING LANGUAGES - ASCII

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SOURCE CODE AVAILABLE (Y/N) - N

OTHER PROG/OPER SYS INFO - The source code is not supplied with BETA.

HARDWARE REQS - BETA operates on IBM-PCs, XTs, ATs or compatible machines having 128k bytes of memory, CGA, EGA or Hercules graphics and math coprocessors.

TIME REQUIREMENTS - Most of the sample problems (10,000 histories) can be run in 30 seconds (IBM 360/91).

REFERENCES - R.R. Fullwood, and W.G. Shier, PRA Using Event Tables and the Brookhaven Event Tree Analyzer (BETA), Reliability Engineering and System Safety 30 (1990) 79-92.

SUBJECT CLASS CODE - K

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
B CODES
FAILURE MODE ANALYSIS
SYSTEM FAILURE ANALYSIS

EDB SUBJECT CATEGORIES -
990200 070201

SPONSOR - DOE/ER

PACKAGE TYPE - AS - IS