

**PACKAGE ID** - 001189IBMPC01 WINRV2.0

**KWIC TITLE** - Fault Tree Reliability Analysis and  
Design-for-reliability

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

**COMPLETION DATE** - 05/01/1998   **PUBLICATION DATE** - 04/01/1998

**DESCRIPTION** - WinR provides a fault tree analysis capability for performing systems reliability and design-for-reliability analyses. The package includes capabilities for sensitivity and uncertainty analysis, field failure data analysis, and optimization.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Media Includes Source Code, Text Library, User's Guide, Executable Module, Sample Problem Input and Output;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 CD Rom

**METHOD OF SOLUTION** - Fault trees are solved in WinR using minimal cut sets. Sensitivity and uncertainty analysis use Latin Hypercube Sampling (LHS). Optimization capabilities are based on generic algorithms.

**COMPUTER** - IBM PC

**OPERATING SYSTEMS** - Windows 3.x and Windows 95/T

**PROGRAMMING LANGUAGES** - Visual Basic; Visual Basic 4.0.; FORTRAN

**SOFTWARE LIMITATIONS** - Fault tree analysis is limited to 1000 total events, 300 subsystem, and 150 primary events per subsystem. Optimization is limited to a maximum of 50 improvement option categories with up to 20 levels per category. These limitations are based on current code dimensions.

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**SOFTWARE LIMITATIONS - (CONT)**

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

**UNIQUE FEATURES** - WinR is distinguished by its complete integration of fault tree editing, failure data management, and graphics output. WinR also includes unique utilities for processing field failure event data. Finally, the software integrates sensitivity and uncertainty analysis and stochastic optimization.

**RELATED SOFTWARE** - WINRV2.0 replaces earlier Sandia software called RAMP, but is independent of RAMP and represents a new capability.

**HARDWARE REQS** - WinR operates on an IBM compatible PC running Windows 3.1 or Windows 95/NT. The software requires about 15 MB of disk space (60 MB if the optional online user's manual is installed) and 16 MB of RAM for efficient operation on the system hard drive.

**TIME REQUIREMENTS** - Fault tree analysis for small problems (e.g., 100 gates with minimal redundancy will require a few seconds to a minute for analysis. Large problems (e.g., problems with hundreds of gates high level redundancy can require minutes to tens of minutes or more for execution). Large stochastic optimization problems may require tens of minutes or even hours to run.

**REFERENCES** - Sandia Center for System Reliability, WINR Reliability Software User's Manual, April, 1998.

**ABSTRACT STATUS** - Released AS-IS 10/06/1998

**SUBJECT CLASS CODE** - Z

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
W CODES  
RELIABILITY  
DATA

**EDB SUBJECT CATEGORIES** -

990200

**SPONSOR** - DOE/DP

**PACKAGE TYPE** - AS - IS