

# List of Abbreviations

AIM	Analog Input Module
BMSC	Basic Message Sequence Chart
BN	Bayesian network
CBS	Computer-Based System
DCC	Digital Control Computer
DIM	Digital Input Module
DTMC	Discrete Time Markov Chain
DU	Display Unit
ECCS	Emergency Core Cooling System
EPROM	Erasable Programmable Read Only Memory
EU	Embedded Unit
FSP	Finite State Process
HMSC	High-level Message Sequence Chart
LAN	Local Area Network
LOCA	Loss of coolant accident
LT	Level Transmitter
LTS	Labeled Transition Systems
MC	Markov Chain

MCS	Monte Carlo simulation
NPP	Nuclear Power Plant
NT	Nitrogen Tank
RD	Rupture Disc
ROM	Relay Input Module
RT-20	Real Time-20
RTD	Resistance Temperature Detector
SDLC	Software Development Life Cycle
SRE	Software Reliability Engineering
SRGM	Software Reliability Growth Models
TF	Test Facility (System)

# List of Symbols

$X_i$	node $i$ in BN
$X$	Set of nodes in BN
$P(X)$	Joint probability
$S_N$	Strength of software component $N$
$W$	Applied load on the software component
$P(X_i)$	Marginal probability of $X_i$
$P(X = F)$	Probability that $X$ fails
$f(x)$	probability density function of $x$
$p_{ij}$	Probability of transition from state $i$ to state $j$
$q_{ij}$	Transition rate from state $i$ to state $j$
$p_i(t)$	Probability that a component is in state $i$
$R_{com}^{est}$	Estimated Reliability of communication module using MC
$R_{com}^{act}$	Actual Reliability of communication module using operational profile
$R_{com}^{diff}$	Difference in $R_{com}^{est}$ and $R_{com}^{act}$
$UR_{com}^{est}$	Estimated Unreliability of communication module using MC
$UR_{com}^{act}$	Actual Unreliability of communication module using operational profile
$UR_{com}^{diff}$	Difference in $UR_{com}^{est}$ and $UR_{com}^{act}$