

## ERICA Product Details

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| <b>Title:</b>                                      | <b>Application Software Case Studies in FY04 for the Mathematical, Information and Computational Sciences Office of the U.S. Department of Energy</b>   |
| <b>Contributors<br/>(Name, Email, Institution)</b> | <a href="#">Kenneth J Roche</a> (BATTELLE (PACIFIC NW LAB)), John Drake (Oak Ridge National Laboratory), P Jones (Los Alamos National Laboratory), David J Dean (Oak Ridge National Laboratory), John Blondin (North Carolina State University), Connor P Ballance (Rollins College), Michael S Pindzola (Auburn University), Carleton DeTar (University of Utah), James Osborn (University of Utah), Richard Brower (Boston University), H Neff (Boston University) and Bob Sugar (University of California, Santa Barbara)  |
| <b>Responsible Author:</b>                         | Roche, Ken  |
| <b>Product Type:</b>                               | Formal Report (Technical Report)  |
| <b>Description:</b>                                | The report presents the problems and work conducted to satisfy the Department of Energy's (DOE) Office of Mathematical, Information, and Computational Sciences program's FY04 software effectiveness measure, part of its annual Office of Management and Budget (OMB) program goal entered into DOE's Performance Measure Manager (PMM) system at the end of the FY, for the following science and engineering applications: CCSM (Community Climate System Model to simulate Intergovernmental Panel on Climate Change (IPCC) future scenarios), NSMMC (Nuclear Shell Model Monte Carlo code; nuclear structure code here used to study the shape of various nuclei as a function of particle number |

and temperature), VH-1 (Virginia Hydrodynamics code; to understand the origin of Spherical Accretion Shock Instability and the conditions under which it may affect the evolution of the nascent shock wave in core-collapse supernovae), RMPS (R-Matrix with PseudoStates; used to study the electron excitation/ionization of light fusion related species through to heavier complex targets such as Fe), and SciDAC MILC codes (Quantum ChromoDynamics codes to study the equation of state of the quark-gluon plasma, and predict the decay rates of the D, B mesons).

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