

## Overview of MELCOR Code Development Larry Humphries (Sandia National Labs)

Sandia National Laboratories develops and maintains MELCOR for the U.S. Nuclear Regulatory Commission. This presentation summarizes recent efforts in model development, code assessment, software quality assurance practices, and development of user utilities and additional capabilities. Recent developments in software quality assurance includes publication of interim documentation that highlight code changes and the ability to obtain detailed configuration information for executables such as compiler options as well compiler and code version information. An overview of recent model development includes modeling for high temperature gas reactors, accumulator model, and activity models. Named comment blocks were added to the latest version of MELCOR 2.1 which provides the user the capability of activating or skipping blocks of code in an input deck through a variety of input methods. Variable input fields were also added as a convenience to allow users the capability of globally changing fields defined as variable input. Also new to MELCOR 2.1 is the ability to print all default sensitivity coefficient values to a text file. Finally, ongoing work at both Sandia and the Russian Academy of Science (IBRAE) is aimed at improving code performance and will consider code optimization, solver improvements, parallelization, and code numerics.