Abstract Submitted
for the TSF10 Meeting of
The American Physical Society

**SCALE 6.1 Validation Testing: Unit Cell Data and Material Input** PAUL STAUDUHAR, University of Dallas, BRAD REARDEN, DOUGLAS PEPLOW, ORNL, CHRIS PERFETTI, University of Michigan, OSCAR LASTRES, University of Tennessee, HEATHER CONNAWAY, MIT, DAVID HARTMANGRUBER, Georgia Tech — SCALE (Standardized Computer Analysis for Licensing Evaluation) computer program code system is used by the Nuclear Regulatory Commission, other regulating agencies, and scientists to perform important calculations for nuclear facilities and the transportation and storage of nuclear material. The SCALE 6.1 update improved computational abilities over previous versions. SCALE 6.1 must accurately execute all of the functions from SCALE 6.0 and be backwards compatible. A test suite was developed that implements the various modules of SCALE 6.1 and tests them against certain benchmark problems known to execute correctly in SCALE 6.0. The research reported here, conducted at Oak Ridge National Laboratory, consisted of testing all parameters of the CENTRM/PMC and XSDRNPM functional modules, unit cell geometry data, and the material input processor of the SCALE code system. By creating a set of test problems based on certain benchmarks, specific indicating values are compared with known correct values to evaluate the accuracy between the software versions. My test suite and the test suites of four other testers will be part of a comprehensive tool sent with all new software packages of the SCALE 6.1 release.

Paul Stauduhar
University of Dallas

Date submitted: 24 Sep 2010 Electronic form version 1.4