Radiation Safety Information Computational Center

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"No act of kindness, no matter how small, is ever wasted."

– Aesop

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CHANGES TO THE RSICC CODE AND DATA COLLECTION

There are two updates to the RSICC catalog for those individuals that may be interested.

CCC-871/CTF

Oak Ridge National Laboratory and North Carolina State University have contributed a modernized version of the legacy subchannel thermal hydraulics (TH) code COBRA-TF.

CTF is a TH subchannel code designed for modeling of light-water reactor (LWR) fuel bundle geometry. It is used to solve nominal and off-normal conditions in pressurized water reactor and boiling water reactor designs. The code can solve single- or two-phase flow in steady-state or transient conditions. It includes a solver for fuel rod geometry, allowing for prediction of fuel rod behavior and temperature distribution.

CTF uses a two-fluid, three-field (i.e., fluid film, fluid drops, and vapor) modeling approach. Both subchannel and 3D Cartesian forms of mass, momentum, and energy conservation equations are available for LWR modeling. CTF includes a wide range of TH models important to LWR safety analysis, including flow regime–dependent, two-phase wall heat transfer; inter-phase heat transfer and drag; droplet breakup; and quench-front tracking.

Users must be approved for access to CTF in accordance with software distribution requirements set by the inter-institutional agreement between ORNL and NCSU.

The package will be transmitted on a DVD or via download link, which includes instructions for executable access, sample inputs, test problems, documentation, and reference material. Linux platforms are supported and requires gcc, g++ and gfortran compilers. (C00871PCX8600)

CCC-873/STANDARDS 5.0

Oak Ridge National Laboratory and Pacific Northwest National Laboratory have contributed an update of UNF-ST&DARDS 4.1.SP1 package, named STANDARDS 5.0.

STANDARDS 5.0 is an integrated data and analysis system designed to simplify and automate the performance of accurate and efficient evaluations for characterizing the input to the overall waste management system. A relational database has been assembled to provide a standard means by which STANDARDS can succinctly store and retrieve M&S parameters for specific spent nuclear fuel (SNF) analysis. SNF data can be imported into this database for user-specific

analysis. A library of analysis model templates provides the ability to communicate the various sets of M&S parameters to the most appropriate M&S application. A process manager facilitates performance of actual, as-loaded, assembly-specific, and cask-specific evaluations. Interactive visualization capabilities facilitate data analysis and results interpretation.

STANDARDS 5.0 includes the following capabilities:

- An SNF database (relational database tables) for storing and preserving SNF data and supplying data to various SNF analyses.
- Various graphical user interface (GUI)–based data importers for importing user-specific data to the STANDARDS database.
- Automated assembly-specific depletion and decay analyses using the SCALE nuclear code.
- Canister-specific criticality, misload, and shielding analyses using the SCALE nuclear code.
- Canister-specific thermal analysis using COBRA-SFS thermal hydraulic code.
- Design basis decay, criticality, thermal, shielding, and site boundary analyses using user-defined, design basis assembly and loading configurations.
- Detailed decay and criticality analyses using detailed irradiation history.
- Various sensitivity analyses for defining bounding and design basis configurations for dry storage systems.
- GUI-based data interrogation.
- GUI-based analysis template development.
- Sample reactor (SCALE-ORIGEN) libraries for selected PWR and BWR fuel types, and
- Sample criticality (SCALE-KENO), shielding (SCALE-MAVRIC), and thermal (COBRA-SFS) templates.
- Canister loading optimization analysis.
- Spent Nuclear Fuel Inventory Projection.

SCALE 6.2 or later and COBRA-SFS licenses are required for running any analysis using STANDARDS. Users are required to import their data for assembly-specific and canister-specific analyses.

STANDARDS 5.0 is distributed via web downloadable link; it contains the referenced document in PDF format and compressed zip Windows executable files, sample problems, data, and reference material. (C00873PCX8600).

SINGLE USER MULTI-ORGANIZATION LICENSE AGREEMENT

(*Last updated July 1, 2018*)

To support the use of RSICC software by multi-national organizations and international collaborations, RSICC now offers our customers the option to request a Single User Multi-Organization Software License Agreement. The Single User Multi-Organization Software License Agreement addresses issues regarding the "re-export" of software and data packages obtained from RSICC because under Federal export control regulations our customers cannot "re-export" the code to another person in another country.

This agreement is intended to allow our customers to specify additional foreign locations for which they may be approved to utilize RSICC software. In general, the default option will be the standard single user license agreement for the country in which the customer resides and is employed. The following defines the requirements for use of this license agreement.

This SUMO software license agreement is only available for individuals that receive software directly from RSICC. In addition, the point of contact (host or system administrator) at the additional foreign location(s), must be licensed directly from RSICC and must agree to abide by the policies associated with host/server/cluster systems that are summarized following this announcement.

To apply for this license the customer must first register with RSICC and provide full and complete information. When submitting their request, the customer must provide the following information in the COMMENTS section of the request form for each applicable package:

- full name and email address of the point of contact (POC),

- the full name of the organization at which the software will be used, and

- the complete address (no post office boxes) of the organization under which additional access is being requested.

Individuals that would like to utilize this service must have a valid reason for needing this access and provide such justification to RSICC in the END USE statement as well. If this information is not included in the END USE statement, then the customer's request will only be considered for the standard single user license agreement.

When processing the request, RSICC staff will verify that the designated POC(s) has a valid license for the same version of software that is being requested by the applicant and verify that the POC obtained the package directly from RSICC. If the POC, did not obtain the package directly from RSICC, the POC will need to register with RSICC, apply and be approved for the package before the applicant's request can be processed.

The requests will be reviewed for each designated location and a decision will be rendered as to whether a license is granted. If an organization or location is denied, then the customer will be notified and may be limited to the standard single user license agreement for their own organization.

Exceptions:

Persons that have any citizenship of or are in countries that are not listed in Appendix A of 10 CFR 810 are not permitted to utilize the Single User Multi-Organization License Agreement.

Fees:
The customer making the request for the single user multi-organization software license will be required to pay the cost recovery fee for each location at which they are approved. In addition, the POCs at the other foreign locations that have not obtained the software directly from RSICC will have to obtain the software from RSICC and pay the applicable fee.

HOST/SERVER/CLUSTER GUIDANCE

(*Last updated November 1, 2022*)

Software obtained from RSICC is export controlled under the jurisdiction of the U.S. Department of Energy, 10 CFR 810, or the U.S. Department of Commerce, 15 CFR 730-744. Additionally, RSICC distributes this software under guidance issued by the U.S. Department of Energy's Office of

Nonproliferation and Arms Control. The distribution and use of RSICC software is restricted and controlled under these regulations and guidelines. Individuals that request the software must be cleared through both an export control and a nonproliferation review process prior to the individual being granted a license to receive software for a specific end use.

The software distributed by RSICC is licensed to individual requestors (Licensee) under a single-user license agreement while employed at the organization listed on the license forms and cannot be transferred to any other individual or entity. The Licensee is responsible for the control, management and protection of the software. The Licensee is responsible for compliance with U.S. export control requirements (laws and regulations) and the terms of the license agreement. This includes preventing access to the software by any individual or entity (including IT staff) as such access may be deemed an export control violation.   Individual Licensees should protect the software, documentation, and installation accordingly. Neither the software nor manuals should be posted to the Internet or otherwise be made publicly available. Any and all system administrators that are assisting with the installation and maintenance of a licensed code(s) or that would otherwise have access to a licensed code(s) that is placed on a stand-alone system and/or server/cluster must also be licensed for the exact version of the software that is placed on these systems. Individuals whose duties are only that of a System Administrator are not authorized to be users of the licensed codes(s). **Those individuals serving only as system administrators are NOT charged the cost recovery fee for processing their requests.**

System administrators and/or hosts should implement standard and customary account access and/or file permissions such that only the licensed individuals may access the program.   This should include identity and access management, such as multi-factor authentication, to ensure software is kept secure from unauthorized access. Please note that the single-user license agreement is code and version specific. The Licensee must be licensed for the specific version to which they are granted access. For example, an individual with a license only for MCNP5 should not be permitted access to MCNP6.1. Additionally, some individuals are only licensed for the executable versions of the code(s), and the system administrator(s) must ensure that such individuals do not have access to the source code. Therefore, it is recommended that the source code be removed after installation of the program(s) and furthermore procedures must be implemented such that control software is not lost via decommissioned storage media.

Network, server, parallel, cluster, or similar installations outside of the United States may not be within a country NOT listed in Appendix A of 10 CFR 810 nor occur at facility identified as an entity under 15 CFR 744.

RSICC software may be hosted on a server, cluster or high-performance computing system with the following conditions:

1) Each server/cluster operator must designate one individual responsible for oversight of the use of RSICC software on the server/cluster. This individual will be responsible for communicating and reporting to RSICC on an annual basis regarding the users of the cluster/server.

2) Each and every system administrator that would have access to any form (source or executable) must register, request, **and** be approved for the software with RSICC for the version to which they would have access.

3) An authorized and approved system administrator may install and maintain the software and must ensure that the software is not distributed or shared with those who do not have a specific license for the version to which they would have access. System administrators are required to utilize protocols that limit access to the software. Users should only be granted access and use of software to which they have a specific license, e.g. users that have a license for SCALE 6.1 should NOT be granted access to SCALE 6.0 or SCALE 6.2.

4) System administrators are not permitted to provide access to RSICC software to individuals **NOT** located within the same country as the server/cluster unless the Licensee has an approved Single User Multi-Organization License Agreement from RSICC.

5) Individuals with citizenship or multiple citizenships that include a country not listed in Appendix A of 10 CFR 810 **may be granted** access to RSICC software on a server/cluster, if the individual **has been approved** for access to the software by the U. S. Department of Energy's Office of Nonproliferation and Arms Control.

6) Under no circumstances should an individual with citizenship or multiple citizenships that include a country **NOT** listed in Appendix A of 10 CFR 810 be granted access to RSICC software on the server/cluster, if that individual has **NOT** been approved by the U.S. Department of Energy's Office of Nonproliferation and Arms Control. Additionally, under no circumstances should an individual located at an entity identified under 15 CFR 744 be granted access to RSICC software on the server/cluster.

7) Individuals that have been only granted access to RSICC's secure cloud server **MAY NOT** be granted access to any other server/cluster.

8) When a Licensee requests access to RSICC software on a server/cluster, the system administrator must follow the following process:

(a) The system administrator will require that the Licensee provide proof of a license by requiring that the Licensee provided an electronic copy of either the Single User License Agreement or the Single User Multi-Organization License Agreement. System administrators cannot provide access to anyone located in another country unless that individual has an approved Single User Multi-Organization License Agreement from RSICC and the organization of the system administrator is listed on the SUMO License Agreement.

(b) The system administrator must ensure that the Licensee's current installation/affiliation is the same as that on the license agreements.

(c) If the Licensee's current installation is NOT the same as that on license agreements, then access should be denied until the Licensee has updated license agreements with RSICC. This will require the Licensee to update their registration with RSICC and submit a new request with RSICC. The Licensee should not be granted access to the software until they have been authorized. Please note that some approvals are location and organization specific.

9) The system administrator will maintain records of the Licensees that are utilizing the server/cluster and send a record to RSICC (rsic@ornl.gov) that include the Licensee's full name, RSICC customer identification number, installation, and the codes to which the Licensee has access on the system. This information must be provided when the system administrator makes the first request to RSICC to provide such services and must be updated annually by sending updated information to RSICC no later than November 30 of each calendar year. The record should include the customer's full name, RSICC customer number, customer installation as well as request numbers and software package name and identifier for which they are accessing on the cluster.

Server/cluster operators that agree to comply with these conditions may install RSICC software on the server/cluster that are within their corporate/institutional ownership, physical control, and the individual country identified.

END USE STATEMENT

Customers are strongly encouraged to provide full and complete information regarding the intended end use of the software being requested. End use statements that specify that the code is for research, training or educational activities are not sufficient. RSICC's regulators need to know explicitly for what purpose you intend to use the codes and detail needs to be provided. Requests that lack sufficient detail will be rejected. Please include the type of calculations that you intend to perform e.g., criticality, reactor physics, shielding, dose, etc. and for what types of applications e.g., reactor shielding design, fusion shield design, nuclear medicine, reactor design, etc.

Students that submit requests to RSICC are strongly encouraged to consult their professor or academic advisor as to what purpose they intend to use the codes for their classes and/or their research. Professors are also encouraged to provide such guidance to their students since the professor is responsible for identifying the activities of the students under their tutelage. Professors are encouraged to write an end use statement for their students that describe both the intended use of the code and the applications for which the code will be applied. Providing this information will help expedite the processing of the request and speed up delivery of the software.

REGISTRATION REQUIREMENTS

During the registration process, individuals are required to provide the name of the institution at which they will use the software, an institutional mailing address and an institutional e-mail address. RSICC's regulators require us to obtain an address associated with the individual's organization. If you are working remotely, you may include an alternate mailing address as a comment during the registration process. Please note that you cannot provide an alternate mailing address that is in a country different than that for the organization with which you are affiliated. RSICC cannot register a customer for access to software in a country different than that of the organization with which the individual is affiliated as the single user license and export control agreements are specific to the country in which the organization is located.

CONFERENCES, TRAINING COURSES, SYMPOSIA

CONFERENCES

Best Estimate Plus Uncertainty International Conference 2024

BEPU is a leading international meeting on the use of best estimate and uncertainty analyses methodologies for nuclear reactor safety analyses. The last BEPU meeting was held in May 2018 in Lucca, Italy. The BEPU2018 conference demonstrated that:

- BEPU applications in licensing are limited and their increase is foreseen to be slow;
- there is a need for comprehensive guidelines for use of BEPU technologies, and the availability of mature tools was questioned;
- consistency in all steps of BEPU needs to be ensured, however it was identified that there is a need to reduce shortcuts in BEPU applications and to focus on exploitation of the full BEPU process;
- experimental data is central to the BEPU processes and methodologies; thus the use the available of experimental data in an efficient and consistent way is required; and
- BEPU is at first a methodology that increases the knowledge and understanding of uncertainties and biases embedded in any deterministic safety analysis.

Given the outcomes of the BEPU2018 conference, the community recognized the need to address some of the identified shortcomings and initiated the planning for BEPU2024. The BEPU2024 Conference is planned to be organized in two main Tracks devoted to Industrial Applications and Licensing (Track-1) and to Research and Development (Track-2). Plenary Sessions, Regular Sessions, and Panel Discussions Sessions to promote intensive interactions among all conference participants. Poster and student sessions are also envisioned.

Those interested can find additional details at **www.nineeng.com/bepu2024.**

TRAINING COURSES

LANL MCNP6 Class Schedule

Individuals interested in attending or that have registered for these classes are encouraged to contact the organizers regarding any delays or cancellations.

Website: https://mcnp.lanl.gov/classes.html

Dec 4 - 8, 2023 Los Alamos, NM	Variance Reduction with MCNP6 Non-US citizens must register by 2023-09-15	$1,800
Apr 8 -12, 2024 Online	Intermediate MCNP6 Non-US citizens must register by 2024-01-19	$600
Apr 9 – May 3, 2024 Los Alamos, NM	MCNP6 for Nuclear Safeguards Practioners Non-US citizens must register by 2024-02-09	TBD
May 20 – 24, 20204 Los Alamos, NM	Practical MCNP® for Health Physicist, Radiological Engineer, and Medical Physicist Non-US citizens must register by 2024-03-01	$1,800

June 3 – 7, 2024 Los Alamos, NM	Criticality Calculations with MCNP6 Non-US citizens must register by 2024-03-15	$1,800
June 17 – 21, 2024	Introduction to MCNP6 Non-US citizens must register by 2024-03-29	$1,800

See the website for more information.

SYMPOSIA

2023 CALENDAR

October 2023

12th International Conference on Nuclear Criticality Safety (ICNC 2023), October 1 – 6, 2023, Sendai, Miyagi, Japan. Website: https://icnc2023.jaea.go.jp/

4th International Conference on Dosimetry and its Applications (ICDA-4), October 16 – 20, 2024, Valencia, Spain. Website: https://icda-4.webs.upv.es/

November 2023

2023 Nuclear Science Symposium, Medical Imaging and Room-Temperature Semiconductor Conference, November 4 – 11, 2023, Vancouver, Canada. Website: https://nssmic.ieee.org/2023/

2023 ANS Winter Meeting, November 5 – 8, 2023, Washington, D.C., USA. Website: https://www.ans.org/meetings/view-315/

7th International Symposium on the System of Radiological Protection (ICRP 2023), November 6 – 9, 2023, Tokyo, Japan. Website: https://icrp2023.jp/

International Conference on Research Reactors: Achievements, Experience and the Way to a Sustainable Future, November 27 – December 1, 2023, Dead Sea, Jordan. Website: https://www.iaea.org/events/conference-on-research-reactors-2023

World Nuclear Exhibition 2023, November 28 – 30, 2023, Paris, France. Website: https://www.world-nuclear-exhibition.com/en-gb.html

Materials in Nuclear Energy Systems (MiNES), December 10 – 14, 2023, New Orleans, Louisiana, USA. Website: https://www.ans.org/meetings/view-396/

44th Annual Fusion Power Associates Symposium – Pilot Plants for Fusion Power, December 19 – 24, 2023, Washington, D.C., USA. Website: https://fusionpower.org/RegistrationForm.html

2024 CALENDAR

March 2024
International Topical Meeting on Nuclear Applications of Accelerators, March 17 – 21, 2024, Norfolk, Virginia, USA. Website: https://www.jlab.org/conference/AcceleratorApplications2024

April 2024
International Conference on Reactor Physics (PHYSOR 2024), April 21 – 24, 2024, San Francisco, California, USA. Website: https://www.ans.org/meetings/physor2024/

May 2024
Nuclear and Emerging Technologies for Space (NETS-2024), May 6 – 20, 2024, Santa Fe, New Mexico, USA. Website: https://www.ans.org/meetings/nets2024/

Best Estimate Plus Uncertainty 2024, May 19 – 24, 2024, Lucca, Italy. Website: https://www.nineeng.com/bepu2024/

15th International Particle Accelerator Conference, May 19 – 24, 2024, Nashville, Tennessee, USA. Website: https://ipac24.org/

International Conference on Nuclear Security: Shaping the Future, May 20 – 24, 2024, Vienna, Austria. Website: https://www.iaea.org/events/icons2024

International Conference on Decommissioning Challenges: Role and importance of innovations, May 27 – 29, 2024, Avignon, France. Website: https://www.sfen.org/evenement/dem-2024/

June 2024
Nuclear Innovation Conference (NIC 2024), June 5 – 6, 2024, Amsterdam, Netherlands. Website: https://www.nuclearinnovationconference.eu/

2024 ANS Annual Meeting, June 9 – 12, 2024, Las Vegas, Nevada, USA. Website: https://www.ans.org/meetings/view-ac2024/

3rd Global Forum for Nuclear Innovation, June 24 – 28, 2024, Miami Beach, Florida, USA. Website: https://www.globalnuclearinnovation.com/

July 2024
26th Technology of Fusion Energy (TOFE 2024), July 22 – 25, 2024, Madison, Wisconsin, USA. Website: https://www.ans.org/meetings/view-tofe24/

IEEE Nuclear & Space Radiation Effects Conference, July 22 – 26, 2024, Ottawa, Ontario, Canada. Website: https://www.nsrec.com/

August 2024

Utility Working Conference and Vendor Technology Expo (UWC 2024), August 4 – 7, 2024, Marco Island, Florida, USA. Website: https://www.ans.org/meetings/view-388/

14th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics, Operation and Safety (NUTHOS-14), August 25 – 28, 2024, Vancouver, British Colombia, Canada. Website: https://nuthos-14.org/

September 2024

Plutonium Futures – The Science 2024, September 8 – 12, 2024, Charleston, South Carolina, USA. Website: https://www.ans.org/meetings/view-418/

International Conference Nuclear Energy for New Europe, September 9 – 12, 2024, Portoroz, Slovenia. Website: https://www.djs.si/nene2024.

October 2024

GLOBAL 2024, October 6 – 10, 2024, Tokyo, Japan. Website: https://www.ans.org/meetings/view-434/

Pacific Basin Nuclear Conference 2024 (PBNC), October 7 – 10, 2024, Idaho Falls, Idaho, USA. Website: https://www.ans.org/meetings/view-pbnc2024/

Joint International Conference on Supercomputing in Nuclear Applications + Monte Carlo (SNA + MC) 2024, October 20 – 24, 2024, Paris, France. Website: https://www.ans.org/meetings/view-414/

2024 Nuclear Science Symposium, Medical Imaging and Room-Temperature Semiconductor Conference, October 26 – November 2, 2023, Tampa, Florida. Website: TBA.

November 2024

2024 ANS Winter Conference and Expo, November 17 – 21, 2024, Orlando, Florida, USA. Website: https://www.ans.org/meetings/view-347/