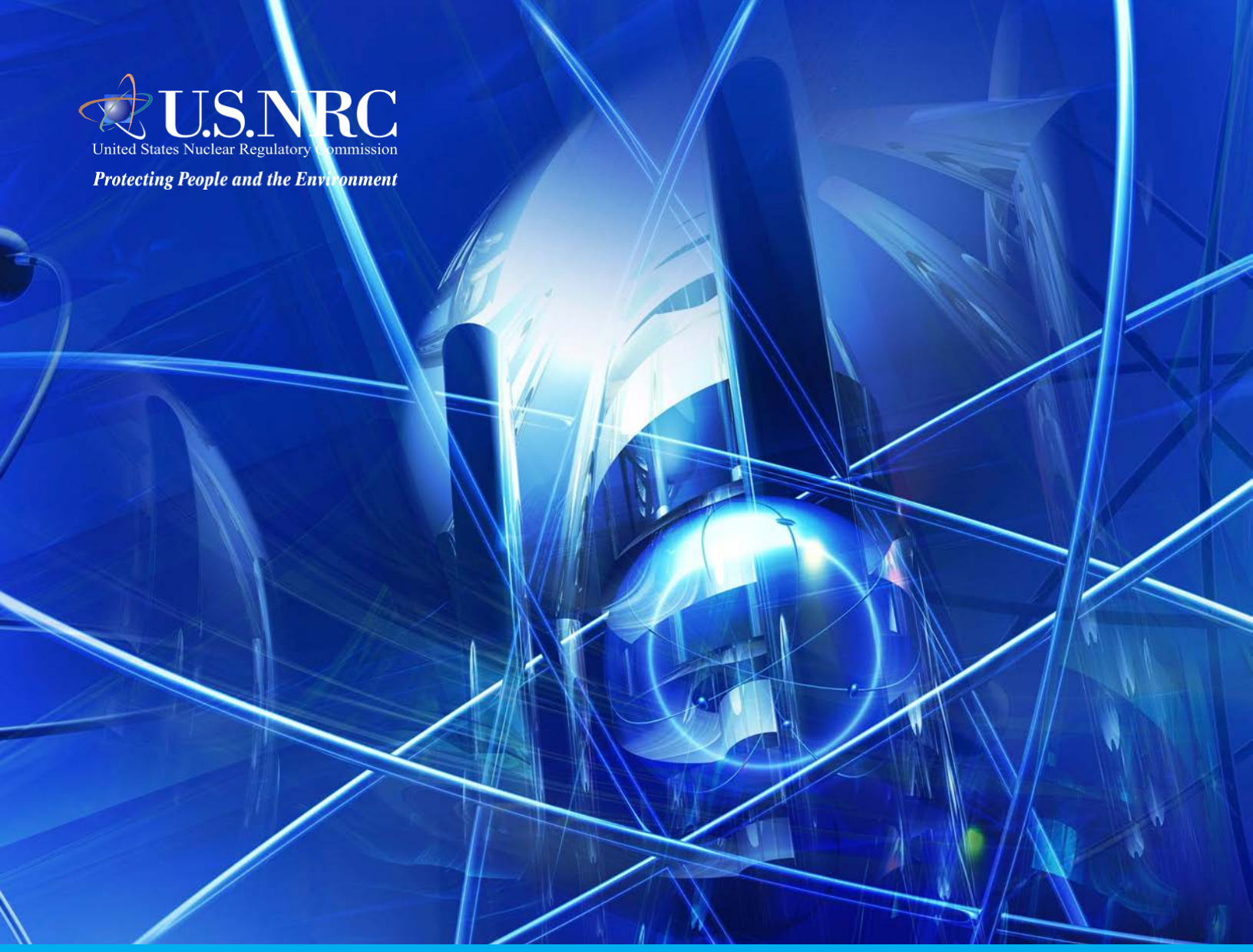
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment



FIRST RAMP USERS' MEETING PROGRAM | OCTOBER 5–9, 2015

Radiation Protection Computer Code Analysis and Maintenance Program (RAMP)

United States Nuclear Regulatory Commission
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North Bethesda, MD 20852

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NRC Website: http://www.nrc.gov/
RAMP Website: http://www.usnrc-ramp.com/

U.S. Nuclear Regulatory Commission's Mission

The U.S. Nuclear Regulatory Commission (NRC) licenses and regulates the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment.

The NRC's regulatory mission covers three main areas:

Reactors—Applies to commercial reactors for generating electric power, as well as research and test reactors used for research, testing, and training.

Materials—Applies to nuclear materials used in medical, industrial, and academic settings and facilities that produce nuclear fuel.

Waste—Applies to the transportation, storage, and disposal of nuclear materials and waste, as well as the decommissioning of nuclear facilities from service.

Welcome to the first RAMP Users' Meeting

Sponsored by the Office of Nuclear Regulatory Research

Meeting participants,

Welcome to the first Radiation Protection Computer Code Analysis and Maintenance Program (RAMP) users' meeting, sponsored by the U.S. Nuclear Regulatory Commission's (NRC) Office of Nuclear Regulatory Research. The Office of Nuclear Regulatory Research (RES) plans, recommends, manages, and implements programs of nuclear regulatory research, confirmatory analyses, standards development, and resolution of generic safety issues for nuclear power plants and other facilities regulated by the NRC. RES supports regulatory decisionmaking and partners with other NRC program offices, Federal agencies, industry research organizations, international organizations, and universities.

The RES staff reflects diversity in academic degrees, demographics, and technical disciplines. The wide range of engineering and scientific disciplines includes expertise in thermal-hydraulics, severe accident progression, nuclear materials, human factors and human reliability, health physics, fire protection, seismology, environmental transportation, and probabilistic risk assessment. It is this diversity in highly technical and specialized disciplines that allows RES to provide technical support and consultation to the other program offices at the NRC.

RES also coordinates domestic and international cooperative nuclear safety research activities, including cooperative code-sharing programs for the following areas:

- thermal hydraulics, called the Code Applications and Maintenance Program (CAMP)
- severe accidents, called the Cooperative Severe Accident Research Program (CSARP)

RAMP is a new initiative patterned after the successful CAMP and CSARP programs. The NRC is pleased to introduce RAMP and believes the international community will both contribute to and benefit from the collaborative exchange of information and ideas on radiation protection codes.

Again, welcome to the RAMP Users' Meeting. We look forward to your active participation.

Brian Sheron, Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

RAMP meeting participants,

I am pleased to welcome you to the first ever Radiation Protection Computer Code Analysis and Maintenance Program (RAMP) meeting. I am the Chief of the Radiation Protection Branch, and my team of dedicated staff leads this effort at the NRC. We have worked very hard to bring you a thought-provoking and informative RAMP meeting.

As you know, RAMP is a computer code management program that supports development and maintenance of radiation and dose assessment codes. Our goals are to do the following:

- streamline updates
- incorporate the latest accepted state-of-the-art models
- prioritize technical updates
- achieve consistency in documentation
- implement a consistent software quality assurance program
- leverage fiscal resources
- implement centralized and consistent management and control structure
- respond to RAMP user needs
- leverage technical expertise

In addition to the RAMP program, my branch is responsible for a number of regulatory activities. We develop, perform, and manage research programs supporting risk-informed regulatory decisionmaking in radiation protection at nuclear power plants, materials facilities and users, and fuel cycle facilities. We serve as an agencywide resource by providing technical support in all aspects of radiation protection to program offices, as well as to the U.S. Nuclear Regulatory Commission's domestic and international regulatory and scientific counterparts. We develop and maintain computer codes for assessment of radiation doses to workers and members of the public, analyze and report worker exposure to Congress and other stakeholders, and execute research in radiation dosimetry and health studies. We also promote and participate in knowledge management activities within the agency in radiation protection.

We are glad you are here, and we continue to encourage other organizations to join. It is our belief that through RAMP forums and user meetings, participants can make connections and exchange information on radiation protection issues. During the session breaks, take the time to get to know us and create those network connections to further the collaborative exchange of information. We want to hear from you so that we can make RAMP the best program possible.

Welcome again,

Rebecca Tadesse, Chief
Protection Branch of System Analysis
Office of Nuclear Regulatory Research

Meet the RAMP Team

The NRC RAMP Team

Stephanie Bush-Goddard, Ph.D.
RAMP Program Manager

John Tomon, CHP
RAMP Program Manager

Kimberly Gaskins
RAMP Administrator

Pacific Northwest National Laboratory (PNNL) RAMP Team

April Augustine, PMP
PNNL RAMP Project Manager

Abby Foster
PNNL RAMP Project Coordinator

Kenneth Geelhood
RAMP Co-Principle Investigator

Walter Luscher, Ph.D.
RAMP Co-Principle Investigator

Lockheed Martin RAMP Team

Poonam Sachdeva, PMP
Lockheed Martin RAMP Project Manager

Wendy Chinchilla
RAMP Operations/System Analyst

Raymond Aurdos
RAMP Website Developer

RAMP Users' Meeting Program at a Glance

Date	Time	Program
Monday October 5th, 2015	7:30 AM – 8:00 AM	Morning Registration
	8:00 AM – 12:00 PM	RASCAL Training
		VARSKIN Training
	9:00 AM – 10:00 AM	HABIT Discussions
	10:15 AM – 11:15 AM	Radiological Toolbox Discussions
	12:00 PM – 1:00 PM	Lunch Break
	1:00 PM – 5:00 PM	RASCAL Training continues
		VARSKIN Training continues
	1:30 PM – 2:30 PM	DandD Discussions
Tuesday October 6th, 2015	7:30 AM – 8:00 AM	Morning Registration
	8:00 AM – 12:00 PM	RASCAL Training continues
		VARSKIN Training continues
		SNAP/RADTRAD Discussions
	12:00 PM – 1:00 PM	Lunch Break
	1:00 PM – 5:00 PM	RASCAL Training continues
		VARSKIN Training continues
		SNAP/RADTRAD Discussions continue
Wednesday October 7th, 2015	8:00 AM – 8:30 AM	Morning Registration
	8:30 AM – 9:30 AM	RAMP Formal Welcome
	9:45 AM – 11:15 AM	Overview of RAMP Codes
	11:15 AM – 11:30 AM	Check-in for Ops. Center Tour (U.S. Members)
	11:30 AM – 12:30 PM	Tour of the NRC Ops. Center (U.S. Members)
	11:30 AM – 1:30 PM	International Meeting & Lunch
	12:30 PM – 1:30 PM	Lunch Break
	1:30 PM – 5:00 PM	SNAP/RADTRAD Training
		PIMAL Training
	1:30 PM – 2:00 PM	GENII Presentation
	2:00 PM – 4:00 PM	Atmospheric Code Discussions

RAMP 1st Users' Meeting Program-At-A-Glance – Continued

Date	Time	Program
Thursday October 8th, 2015	7:30 AM – 8:00 AM	Morning Registration
	8:00 AM – 12:00 PM	RASCAL Discussions
		SNAP/RADTRAD Training continues
		GALE Training
		PIMAL Training continues
	11:30 AM – 12:30 PM	Tour of the NRC Ops. Center (International Members)
	12:00 PM – 1:00 PM 12:30 PM – 1:30 PM	Lunch Break (U.S. Members) Lunch Break (International Members)
	1:30 PM – 5:00 PM	RASCAL Discussions continue
		SNAP/RADTRAD Training continues
		GALE Training continue
		PIMAL Training continues
Friday October 9th, 2015	7:30 AM – 8:00 AM	Morning Registration
	8:00 AM – 12:00 PM	RASCAL Discussions continue
		SNAP/RADTRAD Training continues
		GALE Discussions
		PIMAL Training continues

Training Sessions Descriptions

RASCAL

INSTRUCTORS:
Jeff Kowalczik; U.S. Nuclear Regulatory Commission
George Athey; Athey Consulting, Inc.

This RASCAL training course is a hands-on computer class for new and experienced RASCAL users. No experience with RASCAL is required, but a general familiarity of radiological assessments will be helpful. Many workbook-type problems will guide users to select input values, enter the values, interpret the results, and develop protective action recommendations. The course will include discussion of the new RASCAL features in Version 4.3.1, including multiunit assessments, automated meteorology, improved hole size release pathway functionality, improved source term export and import functionality, and more.

SNAP/RADTRAD

INSTRUCTORS:
Bill Arcieri; Information Systems Laboratory, Inc.
Diane Mlynarczyk; Information Systems Laboratory, Inc.

This SNAP/RADTRAD training course is a hands-on computer class for new SNAP/RADTRAD users. The course covers the use of the Symbolic Nuclear Analysis Package (SNAP) Graphical User Interface (GUI) with its plugin for the RADionuclide Transport, Removal, and Dose Estimation analytical code (RADTRAD-AC) (Version 4.5) developed for the U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Reactor Regulation. SNAP/RADTRAD is used as a licensing analysis code to show compliance with nuclear plant siting criteria for the site boundary radiation doses at the exclusion area boundary (EAB) and the low population zone and to assess the occupational radiation doses in the control room or emergency offsite facility for various loss-of-coolant accidents (LOCA) and non-LOCA design-basis accidents (DBAs). No experience with SNAP is required; however, a general familiarity with dose analysis and the RADTRAD code is recommended. Many workbook-type problems will guide users to select input values, enter the values, and interpret the results. The course will include discussions of the new features of SNAP/RADTRAD, such as the reactor coolant system activity calculator, the larger radionuclide database from the International Commission on Radiological Protection (ICRP)-38 (838 available nuclides), and the ability for the user to model alternative source term non-LOCA DBAs described in Regulatory Guide 1.183, “Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors.”

VARSKIN

INSTRUCTOR:

David Hamby, PhD.; Oregon State University

VARSKIN is a computer code for calculating skin dose. VARSKIN assesses compliance with the dose criteria of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection against Radiation." The code is used to perform confirmatory calculations of licensees' submittals regarding skin dose (from both beta and gamma sources) estimates at any skin depth or skin volume, with point, disk, cylindrical, spherical, or slab (rectangular) sources, and even enables users to compute doses from multiple sources.

PIMAL

INSTRUCTORS:

Dr. Shaheen Dewji; Oak Ridge National Laboratory—Center for Radiation Protection Knowledge
Dr. Michael Bellamy; Oak Ridge National Laboratory—Center for Radiation Protection Knowledge
Dr. Nolan Hertel; Oak Ridge National Laboratory—Center for Radiation Protection Knowledge/
Georgia Institute of Technology—Nuclear and Radiological Engineering Department
Dr. Mauritius Hiller; Oak Ridge National Laboratory—Center for Radiation Protection Knowledge

This workshop has the following objectives:

1. Provide participants with a review of fundamental dosimetric quantities as they relate to operational and radiation protection quantities.
2. Elaborate on the history and capabilities of computational phantoms.
3. Highlight the development and capabilities of the PIMAL software application.
4. Demonstrate how to install PIMAL and navigate its capabilities with simple and intermediate-level real-life problems and applications.
5. Provide in-person resources for RAMP users to navigate their specific needs using PIMAL.

GALE

INSTRUCTORS:

Kenneth Geelhood; Pacific Northwest National Laboratory
Walter Luscher, Ph.D.; Pacific Northwest National Laboratory

The GALE code estimates the gaseous and liquid effluent from commercial light-water nuclear power plants. This FORTRAN-based code can provide estimates for gaseous and liquid effluent from either boiling or pressurized light-water reactors. GALE is maintained at the Pacific Northwest National Laboratory under contract with the NRC Office of Research.

Discussion Sessions Descriptions

HABIT

SPEAKER: Casper Sun, Ph.D.; CHP, U.S. Nuclear Regulatory Commission

U.S. NRC Regulatory Guide (RG) 1.78, "Evaluating the Habitability of a Nuclear Power Plant Control Room during a Postulated Hazardous Chemical Release," endorses the HABIT code to evaluate control-room (CR) habitability following a postulated release of toxic chemicals and radioactive materials. The HABIT code computes both dose rates and chemical concentrations in the CR and determines whether CR personnel are at risk. In early 2015, the "re-hosting" of HABIT was completed, and it was renamed HABIT v1.2. HABIT v1.2 now runs on Windows 7 (64-bit) personal computers and complies with Section 508 regulations for additional accessibility. A series of verifications and validations were performed on HABIT v1.2 to ensure the output values from the new code are consistent with the documented values in Supplement 1 of NUREG/CR-6210, "Computer Codes for Evaluation of Control Room Habitability (HABIT). Further updates are currently underway to add dense gaseous models to predict the unique atmospheric transport and diffusion behavior.

Radiological Toolbox

SPEAKER: Casper Sun, Ph.D.; CHP; U.S. Nuclear Regulatory Commission

The Radiological Toolbox is essentially an electronic handbook with limited computational capabilities beyond those of unit conversion. It is designed to provide electronic access to the vast and varied data that underlies the field of radiation protection. These data represent physical, chemical, radiological, anatomical, physiological, and mathematical parameters detailed in various handbooks that might be of interest to health physicists, radiological engineers, radiologists, educators, NRC inspectors, and others working in fields involving radiation safety and control. The ICRP dose coefficients, risk coefficients, nuclear materials data, and thermal neutron capture cross-sections and cancer risk coefficients have been updated. This document and the software's User's Guide provide further details and documentation of the information captured within the Radiological Toolbox. The current software runs well on Windows systems on 32- and 64-bit machines.

GENII

SPEAKER: Jeremy Rishel, Pacific Northwest National Laboratory

The GENII environmental dosimetry package is a set of codes used for estimating the transport of radioactive releases to air, soil, and surface water and the resulting individual and population radiation doses and risks. GENII provides a state-of-the-art, technically peer-reviewed, documented set of programs for calculating radiation dose and risk following postulated chronic and acute releases.

Atmospheric Dispersion

SPEAKER: Brad Harvey, CCM; U.S. Nuclear Regulatory Commission

The U.S. Nuclear Regulatory Commission uses several atmospheric transport and diffusion codes to model radiological dispersion in its licensing of existing and new reactors. Three of these codes are currently planned to be entered into RAMP. The codes include:

- XOQDOQ, an atmospheric dispersion code used for routine operational releases
- PAVAN, an atmospheric dispersion code used in design-basis accident releases to the exclusion area boundary and outer boundary of the low population zone
- ARCON96, an atmospheric dispersion code used for design-basis accident releases to the control room and technical support center

The discussion will center on how the U.S. NRC uses these codes and future plans for the codes. The discussion will also feature a question-and-answer session, and attendees are encouraged to participate in the code development discussion.

Decontamination and Decommissioning

SPEAKERS:
Adam Schwartzman; U.S. Nuclear Regulatory Commission
Cynthia Barr, U.S. Nuclear Regulatory Commission

The Decontamination and Decommissioning (DandD) software package, developed by the NRC, assesses compliance with the dose criteria of 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination." Specifically, DandD embodies the NRC's guidance on screening dose assessments to allow licensee s to perform simple estimates of the annual dose from residual radioactivity in soils and on building surfaces. For a screening assessment with DandD, the NRC has predefined conceptual models for the scenarios, along with default parameter distributions based on NUREG/CR–5512, "Residual Radioactive Contamination from Decommissioning, Volumes 1 and 3.

Tours of the NRC Operations Center

Attendees are invited to experience the inner workings of the NRC Operations Center where the agency coordinates events involving NRC-licensed facilities or materials. This session will be offered concurrently with some of the training sessions and will emphasize select incident response assets, including Radiological Assessment System for Consequence AnaLysis (RASCAL). It also will address the roles and responsibilities of various teams that comprise the NRC response organization when it is staffed during an emergency. This session will further address the resources the NRC uses when communicating information to external stakeholders and receiving information from licensees during an emergency. Photo identification is required.

Tours of the NRC Operations Center are scheduled on the days and times identified below:

U.S. RAMP Members	Wednesday, October 7	11:30 A.M.–12:30 P.M.
International RAMP Members	Thursday, October 8	11:30 A.M.–12:30 P.M.

Miscellaneous Information

THINGS TO DO IN NORTH BETHESDA, ROCKVILLE, AND WASHINGTON, DC

For information on places to go and things to do in
North Bethesda, MD, click on this link: http://www.americantowns.com/md/northbethesda

For information on places to go and things to do in Rockville, MD, click on this link:
http://www.americantowns.com/md/rockville

For information on places to go and things to do in downtown Washington, DC, click on these links:
http://washington.org, http://visitdc.com

DINING NEARBY:

- Silver Diner, 12276 Rockville Pike, 301-770-2828
- Seasons 52, 11414 Rockville Pike, 301-984-5252
- Chili's Bar & Grill, 11428 Rockville Pike, 301-881-8588
- Home Café, 11710 Rockville Pike, 301-468-6981

Breakfast / Cafe

- Dunkin' Donuts, 11530 Rockville Pike, 301-231-6516
- Ize's Deli & Bagelry, 11622 Rockville Pike, 301-231-0771
- Starbucks, 11802 Rockville Pike, 301-770-9096
- Mosaic Cuisine and Café, 186 Halpine Rd., 301-468-0682
- Home Café, 11710 Rockville Pike, 301-468-6981
- Stella's Bakery, 11510 Rockville Pike, 301-231-9026

Deli

- Executive Deli, 6011 Executive Blvd., 301-881-1171
- Harris Teeter, 11845 Old Georgetown Rd., 301-468-3029
- Whole Foods Market, 11355 Woodglen Dr., 301-984-4880

Fast Food

- Arby's, 11710 Rockville Pike, 301-468-6981
- McDonald's, 11564 Rockville Pike, 301-230-9640
- Popeyes Louisiana Kitchen, 11720 Rockville Pike, 301-881-5803

Italian

- Brio Tuscan Grille, 20 Paseo Dr., 240-221-2691
- Mama Lucia, 12274 Rockville Pike, 301-770-4894
- Timpano Italian Chophouse, 12021 Rockville Pike, 301-881-6939

Japanese, Thai, Chinese, Vietnamese, Mediterranean

- Mediterranean House of Kabob, 11616 Rockville Pike, 301-881-5956
- Taipei Tokyo Café, 11510-A Rockville Pike, 301-881-8388
- Tara Thai, 12071 Rockville Pike, 301-231-9899
- Tony Lin's, 12015 Rockville Pike, 301-468-5858
- Niwano Hana, 887 Rockville Pike, Rockville, 301-294-0553
- East Pearl (Chinese) 838 Rockville Pike, 301-838-8663
- Pho Eatery, 11618 Rockville Pike, 240-669-9777

Latin, Mexican

- Chipotle Mexican Grille, 11830 Rockville Pike, 301-881-2600
- Paladar Latin Kitchen & Rum Bar, 11333 Woodglen Dr., 301-816-1100
- Mi Rancho Restaurant, 1488 Rockville Pike #B, 240-221-2636

Pizza

- Domino's Pizza, 11540 Rockville Pike, 301-230-3030
- Papa John's Pizza, 11638 Rockville Pike, 301-816-4800
- Siena's Vegetarian Pizzeria and Restaurant, 12303 Twinbrook Parkway, 301-770-7474

Notes:

UNITED STATES NUCLEAR REGULATORY COMMISSION

THANK YOU FOR ATTENDING THE 1ST RAMP USERS' GROUP MEETING

Monday, October, 5 – Friday, October 9, 2015

RADIATION PROTECTION CODE
RAMP
ANALYSIS AND MAINTENANCE PROGRAM

For additional Information:

Email:
RAMP@nrc.gov
RAMP.ADMIN@pnnl.gov

RAMP Website:
https://www.usnrc-ramp.com/