ANS D&RS 2016

Joint Topical Meeting Official Program

July 31–August 4, 2016
Sheraton Station Square
Pittsburgh, PA

Decommissioning & Environmental Sciences Division (DESD)
Robotics & Remote Systems Division (RRSD)

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GENERAL MEETING INFORMATION

PLENARY, SPECIAL SESSIONS & EVENTS

D&RS 2016 TECHNICAL SESSIONS

ADDITIONAL

GENERAL CHAIR
Yves Brachet
Westinghouse

Welcome to D&RS 2016 in Pittsburgh, Pennsylvania (USA) !

Dismantling and Decommissioning has become a global "hot topic" in the last few years.

We are observing a paradox situation: at a time when many nuclear plants are under construction in the world, concurrently many other nuclear plants are stopping operations, for reasons spanning from political to economical.

As with any mature industry, we must take great care to leave a clean legacy to the next generations. We must also realize that safe dismantling and decommissioning of our shutdown nuclear plants is the best guarantee that public perception will be favorable. It will also allow better public acceptance for construction of new nuclear reactors.

Pittsburgh, Pennsylvania is a model city to show that excellence in remediation of industrial legacy is possible. After the end of the steel industry cycle, there has been a strong willingness of the people to clean the city. We have all seen the photos of how the city looked 50 years ago and we can see how wonderful it looks now.

Keeping in mind what our predecessors have been able to perform in Pittsburgh, this symposium will be an excellent update of the technology on the decommissioning of nuclear installations and at the same time present the state of the art for remote operations and robotics technology.

It will provide you an opportunity to exchange best practices with your peers representing more than more than a dozen countries with nearly one hundred technical papers.

The opening plenary session features Director-General of the Nuclear Energy Agency, Mr. William D. Magwood, IV and panel discussions including key industry leaders.

In addition to the many excellent technical presentations, this week you will have an opportunity to network during social events, visit display booths in the exhibit area and take a tour of Westinghouse workshop and laboratory facilities, as well as see some of our local Pittsburgh robotics companies during the robotics crawl.

We look forward to meeting you at this important event for our industry and we extend a special thanks to our corporate sponsors for making this conference possible.

Enjoy!
Yves

Meeting Officials

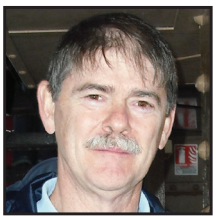
Decommissioning & Environmental Sciences (DESD)
Robotics & Remote Systems (RRSD)

GENERAL CHAIR
Yves Brachet
Westinghouse

ASSISTANT GENERAL CHAIR
Gale Hauck
Westinghouse

FINANCE CHAIR
Pete Leombruni
Westinghouse

FINANCE CO-CHAIR
Mary Ann Walsh
Westinghouse



TECHNICAL PROGRAM COORDINATOR
Jim Byrne
Byrne & Associates, LLC

DESD TECHNICAL PROGRAM CHAIR
Sue Aggarwal
NMNT

RRSD TECHNICAL PROGRAM CHAIR
Mark Noakes
ORNL

LOCAL TECHNICAL PROGRAM CHAIR
Dustin Miller
Chase Environmental

LOCAL SECTION LIASION
Catherine Perego
Westinghouse

Schedule at a Glance

Sunday, July 31

2:00-3:30 pm	DESD Executive Committee
3:00-7:00 pm	Registration Open
6:00-8:00 pm	Exhibits Open
6:00-8:00 pm	Opening Reception

Monday, August 1

7:00 am-7:00 pm	Registration Open
7:00-7:30 am	Speaker Breakfast
7:00-8:00 am	Breakfast
7:00 am-5:00 pm	Exhibits Open
8:30-11:30 am	Opening Plenary
12:00-1:00 pm	Lunch
1:15-5:00 pm	Technical Sessions
5:30-8:00 pm	Special Session

Tuesday, August 2

7:00 am-6:00 pm	Registration Open
7:00-7:30 am	Speaker Breakfast
7:00-8:00 am	Breakfast
7:00 am-3:00 pm	Exhibits Open
8:00-11:45 am	Technical Sessions
12:00-2:00 pm	Awards Luncheon
2:15-5:00 pm	Technical Sessions
6:00-10:00 pm	Off-site Event – Gateway Clipper

Wednesday, August 3

7:00 am-4:00 pm	Registration Open
7:00-7:30 am	Speaker Breakfast
7:00-8:00 am	Breakfast
8:30-11:45 am	Technical Sessions
12:00-1:00 pm	Lunch
1:15-4:00 pm	Closing Plenary
4:30-8:30 pm	Robotics Crawl

Thursday, August 4

7:00-8:00 am	Breakfast
8:00 am-5:00 pm	Technical Tours
8:00 am-3:00 pm	EPA Workshop
8:00 am-2:00 pm	Introduction to the Robot Operating System (ROS) Workshop
12:00-1:00 pm	Lunch
2:00-3:00 pm	RRSD Executive Committee Meeting

Daily Schedule

Sunday, July 31

2:00-3:30 pm	DESD Executive Meeting	Waterfront
3:00-7:00 pm	Registration	Reflections and Admiral Hall Foyer
6:00-8:00 pm	Exhibits Open	Reflections and Admiral Hall
6:00-8:00 pm	Opening Reception	Reflections and Admiral Hall

Monday, August 1

7:00 am-7:00 pm	Registration	Reflections and Admiral Hall Foyer
7:00-7:30 am	Speaker Breakfast	Waterfront Room
7:00-8:00 am	Breakfast	Reflections and Admiral Hall
7:00 am-5:00 pm	Exhibits Open	Reflections and Admiral Hall
8:30-11:30 am	Opening Plenary	Grand Station I-II
12:00-1:00 pm	Lunch	Reflections and Admiral Hall

Decommissioning & Environmental Sciences (DESD) Technical Sessions

1:15-2:45 pm	U.S. Commercial Decommissioning projects	Fountainview
1:15-4:30 pm	Decommissioning and Decontamination Technology Developments	Ellwood
2:45-3:00 pm	Break	Reflections and Admiral Hall
3:00-4:30 pm	International Decommissioning Projects	Fountainview

Robotics & Remote Systems (RRSD) Technical Sessions

1:15-2:45 pm	ROS–The Robot Operating System Panel	Haselton
1:15-2:45 pm	Remote Tools and Processes	Grand Station V
2:45-3:00 pm	Break	Reflections and Admiral Hall
3:00-4:30 pm	Fukushima–Remote Applications	Haselton
3:00-5:00 pm	Robotics and Remote Operations in Hazardous Facilities—I	Grand Station V
5:30-8:00 pm	Special Session	Grand Station I-II

Daily Schedule

Tuesday, August 2

7:00 am-6:00 pm	Registration Open	Reflections and Admiral Hall Foyer
7:00-7:30 am	Speaker Breakfast	Waterfront Room
7:00-8:00 am	Breakfast	Reflections and Admiral Hall
7:00 am-3:00 pm	Exhibits Open	Reflections and Admiral Hall
12:00-2:00 pm	Awards Luncheon	Grand Station I & II

Robotics & Remote Systems (RRSD) Technical Sessions

8:00-11:45 am	Robotics and Remote Operations in Hazardous Facilities–II	Grand Station V
8:00-11:45 am	Advanced Topics in Robotics and Teleoperation	Haselton
10:00-10:15 am	Break	Reflections and Admiral Hall
2:15-3:45 pm	Remote Sensing and Robotic Platforms	Haselton
2:15-5:00 pm	Robotics and Remote Operations in Hazardous Facilities–III	Grand Station V
3:45-4:00 pm	Break	Reflections and Admiral Hall
4:00-5:00 pm	Telerobotics	Haselton

Decommissioning & Environmental Sciences (DESD) Technical Sessions

8:30-10:00 am	Project Infrastructure and Regulatory Criteria	Ellwood
8:30-11:15 am	Final Status Survey and Radiation Measurement	Fountainview
10:00-10:15 am	Break	Reflections and Admiral Hall
10:15-11:15 am	Waste Management Technology Developments	Ellwood
2:15-3:45 pm	U.S. Environmental Protection (EPA) and U.S. Department of Energy (DOE) Panel on the Use of Risk and Dose Assessment Tools	Fountainview
2:15-5:00 pm	Capturing Best Practices and Other Lessons Learned	Ellwood
3:45-4:00 pm	Break	Reflections and Admiral Hall

Off-Site Event

6:00-10:00 pm	Off-site Event – Gateway Clipper	Depart from Hotel Lobby

Daily Schedule

Wednesday, August 3

7:00 am-4:00 pm	Registration Open	Reflections and Admiral Hall Foyer
7:00-7:30 am	Speaker Breakfast	Waterfront Room
7:00-8:00 am	Breakfast	Reflections
12:00-1:00 pm	Lunch	Reflections
1:15-4:00 pm	Closing Plenary	Grand Station II
4:30-8:30 pm	Robotics Crawl	Depart from Hotel Lobby

Robotics & Remote Systems (RRSD) Technical Sessions

8:30-10:45 am	Robotics and Remote Operations in Hazardous Facilities–IV	Grand Station II
8:30-11:45 am	Special Topics in Robotics and Teleoperation	Haselton
10:00-10:15 am	Break	Reflections and Admiral Foyer

Decommissioning & Environmental Sciences (DESD) Technical Sessions

8:30-11:15 am	Decommissioning and Environmental Session	Ellwood
10:00-10:15 am	Break	Reflections and Admiral Foyer

Thursday, August 4

7:00-8:00 am	Breakfast	Ellwood
8:00 am-5:00 pm	Technical Tours	Depart from Hotel Lobby
8:00 am-3:00 pm	EPA Workshop	Haselton 1
8:00 am-2:00 pm	Introduction to the Robot Operating System (ROS) Workshop	Haselton 2
12:00-1:00 pm	Lunch	Ellwood
2:00-3:00 pm	RRSD Executive Committee Meeting	Haselton

General Information

CONFERENCE INFORMATION

Welcome to D&RS 2016! This year's program includes commercial, government, and international project updates along with technology developments in the areas of decommissioning, waste management, and site closure and legacy management. The meeting also features a Professional Development Workshop on EPA's Radiation Risk Assessment Training, an Introduction to the Robot Operating System (ROS) workshop, and an exciting technical tours program.

Meet up with your colleagues at the Sunday cocktail reception, Tuesday's Gateway Clipper Dinner Cruise, or a Pittsburgh brewpub. Pittsburgh also has numerous additional family friendly venues such as the Carnegie Science Center, Children's Museum, Carnegie Natural History Museum, water parks, and Kennywood Amusement Park.

REGISTRATION

Name badges must be worn during all technical sessions and events. Registration opens on Sunday, July 31.

REGISTRATION HOURS

Location: Reflections and Admiral Hall Foyer

Sunday, July 31	3:00 pm-7:00 pm
Monday, August 1	7:00 am-7:00 pm
Tuesday, August 2	7:00 am-6:00 pm
Wednesday, August 3	7:00 am-4:00 pm

CONFERENCE OFFICE

Location: Stoops Ferry Room

Sunday, July 31	3:00 pm-5:00 pm
Monday, August 1	8:00 am-5:00 pm
Tuesday, August 2	8:00 am-5:00 pm
Wednesday, August 3	8:00 am-5:00 pm
Thursday, August 4	8:00 am-10:00 am

General Information

ATTENDEE MEAL FUNCTIONS

Continental Breakfast

Breakfast will be provided to all registered conference attendees, Monday - Wednesday in Reflections; and on Thursday in Ellwood.

Lunch

Lunch will be provided to all registered conference attendees, Monday - Wednesday in Reflections; and Thursday in Ellwood. The Awards Luncheon will take place on Tuesday, August 2 from 12:00-2:00 pm in Grand Station I-II.

EXHIBIT HOURS

Location: Reflections and Admiral Hall

Sunday, July 31	6:00 pm-8:00 pm
Monday, August 1	7:00 am-5:00 pm
Tuesday, August 2	7:00 am-3:00 pm

SPEAKER PREP

Location: Waterfront

Monday, August 1	8:00 am-6:00 pm
Tuesday, August 2	8:00 am-6:00 pm
Wednesday, August 3	8:00 am-5:00 pm

SPEAKER BREAKFAST

Location: Waterfront Room

Monday through Wednesday	7:00 am-7:30 am

General Information

ABOUT ANS

Mission

ANS provides its members with opportunities for professional development. It also serves the nuclear community by creating a forum for sharing information and advancements in technology, and by engaging the public and policymakers through communication outreach.

Code of Ethics

The Code of Ethics covers the ethical and professional conduct that ANS expects of all members. The Code of Ethics can be found at www.ans.org/about/coe.

Statement on Diversity

The American Nuclear Society (ANS) is committed, in principle and in practice, to creating a diverse and welcoming environment for everyone interested in nuclear science and technology. Diversity means creating an environment – both in ANS and in the profession – in which all members are valued equitably for their skills and abilities and respected equally for their unique perspectives and experiences. Diverse backgrounds foster unique contributions and capabilities, and so creation of an inclusive Society ultimately leads to a more creative, effective, and technically respected Society.

ANS believes that everyone deserves opportunities for learning, networking, leadership, training, recognition, volunteering in Society activities, and all the other benefits that involvement in the Society brings, regardless of age, color, creed, disability, ethnicity, gender identity and expression, marital status, military service status, national origin, parental status, physical appearance, race, religion, sex, or sexual orientation. The selection of a member to serve in ANS's volunteer leadership structure shall be based solely on the member's ability, interest and commitment to serve. In particular, ANS encourages members at each level of the Society and in each Professional Division and Technical Group to make special efforts to recruit underrepresented minorities and women to ensure that they are adequately represented in the Society.

Respectful Behavior Policy (Abbreviated)

The open exchange of ideas, freedom of thought and expression, and productive scientific debate are central to the mission of the American Nuclear Society (ANS). These require an open and diverse environment that is built on dignity and mutual respect for all participants and ANS staff members, and is free of bias and intimidation.

ANS is dedicated to providing a safe, welcoming, and productive experience for everyone participating in Society events and other Society activities regardless of age, color, creed, disability, ethnicity, gender identity and expression, marital status, military service status, national origin, parental status, physical appearance, race, religion, sex, or sexual orientation. Creation of a safe and welcoming environment is a shared responsibility held by all participants. Therefore, ANS will not tolerate harassment of or by participants (including ANS volunteer leaders and staff members) in any form. Disciplinary action for participants found to have violated this principle may include reprimand, expulsion from an event or activity with or without a refund, temporary or permanent exclusion from all ANS events and activities, suspension or expulsion from volunteer leadership positions or groups, and/or suspension or expulsion from Society membership, as appropriate.

If you or someone else experiences harassment, regardless of how you otherwise choose to initially handle the situation, you are encouraged to report the situation to ANS. It is possible that the behavior you experienced is part of a larger pattern of repeated harassment. Please alert ANS to behavior you feel to be harassment regardless of the offender's identity or standing in the Society.

The designated contact person for reports at D&RS 2016 is General Chair, Yves Brachet, who can be reached in the hotel or at brachey@westinghouse.com during the event. In addition, you many contact ANS President Andrew C. Klein, PE during or after the event at andrew.klein@oregonstate.edu.

The complete Respectful Behavior Policy can be found at www.ans.org/about/rbp. If you have questions about the policy, please contact ANS Executive Director Robert C. Fine at 708-579-8200 or *rfine@ans.org*.

Consent To Use Photographs And Videos

All attendance of registered participants, attendees, exhibitors, sponsors and guests ("you") at American Nuclear Society ("ANS") meetings, courses, conventions, conferences, or related activities ("Events") constitutes an agreement between you and ANS regarding the use and distribution of your image, including but not limited to your name, voice and likeness ("Image"). By attending the ANS Events, you acknowledge and agree that photographs, video, and/or audio recordings may be taken of you and you grant ANS the right to use, in perpetuity, your Image in any electronic or print distribution, or by other means hereinafter created, both now and in the future, for media, art, entertainment, promotional, marketing, advertising, trade, internal use, educational purposes or any other lawful purpose. For any questions or concerns about the use of your Image, please contact the ANS Meetings & Exhibits Department at meetings@ans.org.

MONDAY, AUGUST 1

OPENING PLENARY

Session Organizer: Gale Hauck (Westinghouse)
Chair: Yves Brachet (Westinghouse), Gale Hauck (Westinghouse)
Location: Grand Station I-II
8:30 am

KEYNOTE SPEAKERS:
Bill Magwood (NEA)

PANELISTS:
Alejandro Tomas Rodriguez Fernandez (Westinghouse Spain)
Bill Zipp (Dominion)
Anthony Orawiec (Exelon of Zion Station)
David Allard (Pennsylvania Bureau of Radiation Protection)
Jorgen Pederson (RE2 Robotics)
Robin Murphy (Texas A&M University)
John Hubball (Westinghouse)

MONDAY, AUGUST 1

SPECIAL SESSION

Session Organizer: James J. Byrne (Byrne & Associates) **Session Chair:** Tom LaGuardia (LaGuardia and Associates)
Location: Grand Station I-II
5:30-8:00 pm

This session brings together leaders from the previous wave of large reactor decommissioning to discuss issues and lessons learned that are still relevant to today's decommissioning programs.

PANELISTS
The Trojan Experience, Lansing Dusek (Fluor)
The Yankee Experience, Russ Mellor (Shipsrock Consulting LLC)
San Onofre 1 experience, Richard St.Onge (Black & Veatch)
The Evolution of the Decommissioning Operations Contractor, Thomas Nauman (EnergySolutions)
The Nuclear Regulatory Experience, Bruce Watson (NRC)

TUESDAY, AUGUST 2

AWARDS LUNCHEON

Session Organizer: Mark Campagna
Location: Grand Station I-II
12:00 pm

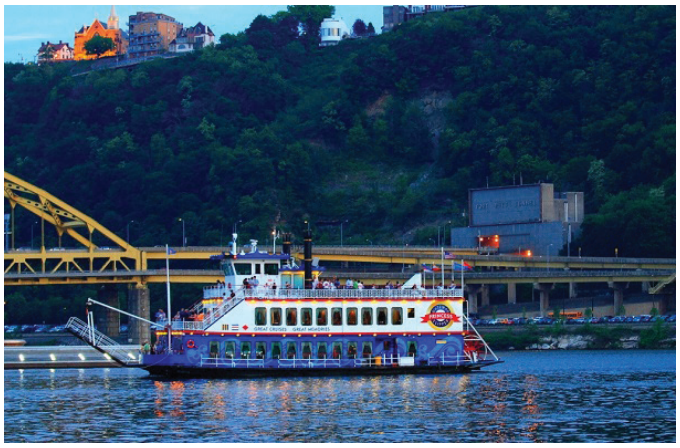
RRSD, Ray Goertz Award
DESD Lifetime Achievement Award

Plenary, Special Events and Sessions

TUESDAY, AUGUST 2

GATEWAY CLIPPER

Location: Dinner Cruise on Pittsburgh Three Rivers, a short walk from hotel.
6:00-10:00 pm Boarding: 7:00-7:30 pm, Sailing/Dinner: 7:30-10:00 pm.



The only way to see the City of Pittsburgh and truly learn about her past, present and future is aboard our Pittsburgh Sightseeing Cruise. Your Pittsburgh riverboat tour will begin on the Monongahela River and will continue on both the Allegheny and Ohio Rivers. You will see our beautiful bridges, Heinz Field and PNC Park, the towering skyscrapers of the city and beautiful Point State Park all while our Captain and Narrator relay interesting facts, tales and river lore that make Pittsburgh and Western Pennsylvania so special!

About the Gateway Clipper Fleet

Based in Pittsburgh, PA on the southern shore of the Monongahela River and founded in 1958, The Gateway Clipper Fleet is the largest inland riverboat company in America. The Clipper's 5-vessel, 1,750 passenger fleet operates year-round with sightseeing, dining, and entertainment cruises. The Fleet also provides privately chartered riverboat cruises for social functions, weddings and corporate events. Sailing on Pittsburgh's three rivers - the Allegheny, Monongahela and Ohio - for almost 60 years, the fleet employs over 45 full time team members and as many as 300 seasonal ones. To date, the Gateway Clipper Fleet has hosted over 25 million passengers and averages over 350,000 guests annually.

WEDNESDAY, AUGUST 3

CLOSING PLENARY

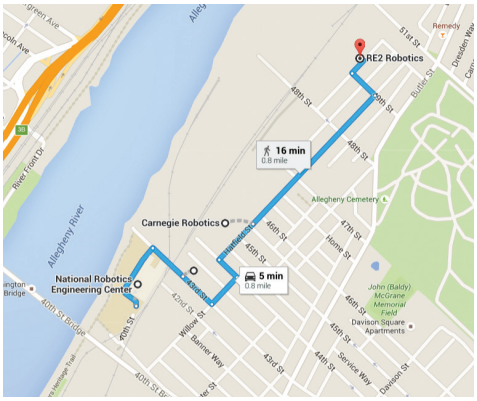
Session Organizer: James J. Byrne (Byrne & Associates)
Location: Grand Station II
1:15-4:00 pm

Three Mile Island Unit 2 Today and Future Plans, Mike Casey (FENOC)
Chornobyl Thirty Years After, Desmond Chan (Bechtel National, Inc.)
NEA Expert Working Group Report on Fukishima Waste Management and Decommissioning R&D, Michael Siemann (NEA)
Discussion on PENTEK Machines at Fukishima and Thinking Outside the Box, Sheldon Lefkowitz (Pentek)
Overbooking Decommissioning (PlantDecommissioning.com)
Use of Remote Technology in Hazardous Environments, Rod Rimando (DOE)

ROBOTICS CRAWL

Session Organizer: Alex Pingel (Westinghouse)
Location: Meet Hotel Lobby: 4:30 pm for transportation to tour
4:30-8:30 pm, then informal food and drink at local restaurants

Take a look at some local developments into the field of robotics and remote systems with a tour of four of Pittsburgh's local robotics companies. Starting with the National Robotics Engineering Center (NREC) and proceeding to RedZone Robotics, Carnegie Robotics, and RE2 Robotics, this tour will showcase local advancements in robotics technology. This event has no associated fee; however, attendees are responsible to pay for their own transportation (taxi) to and from the event and any food costs (restaurant). We plan to arrange for taxis to and from the hotel. We will be walking to and from each of the companies between tours; which is roughly one mile total walking distance. There will be an informal outing for food and drinks after the event.

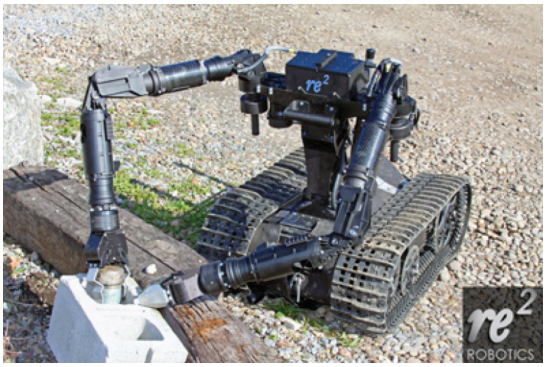


NREC

Come visit NREC advanced robotics facilities and take a selfie with CHIMP! For more than two decades, the National Robotics Engineering Center (NREC) has been developing industry-leading robotic technologies in autonomy, motion planning, mobility platforms, sensors, perception, machine vision, 3D range sensing, and other major areas. NREC is a technology development and commercialization organization that develops and tests robotic systems for industrial and government clients. The NREC combines the systems engineering disciplines of requirements and trades analysis, design, simulation, and testing with applied research capabilities that have produced over 30 awarded or pending patents. Since its creation in 1996, NREC has executed more than $330M in R&D projects, over two thirds of which were funded by the DoD.

RE2

RE2 Robotics, founded in 2001, is a Carnegie Mellon spin-off located in the Lawrenceville section of Pittsburgh. RE2 helps organizations improve worker safety through the use of mobile robotic manipulation technologies that enable remote presence and allow employees to perform dangerous tasks at a safe distance. Technologies, such as RE2's Highly Dexterous Manipulation System, possess intuitive control and dexterous manipulator arms which make it easy to remotely perform complex tasks.



RedZone

RedZone is the leading provider of wastewater asset management solutions. At RedZone we believe that managing assets comes down to managing data. Too frequently in water and wastewater, critical assets are managed without the information required to ensure optimal decision making. Using proprietary data acquisition robotics and industry leading ICOM3 software, RedZone helps owners and engineers get the information they need to comply with regulatory requirements; spend limited funds wisely, save money and the environment.

Carnegie Robotics

Reliable Robotic Products & Custom Solutions. Carnegie Robotics designs, manufactures and supports highly reliable robotics systems and components that help improve productivity, reliability and safety, while reducing cost and increasing profitability for our customers. Our robust sensors are used by many of the top teams in DARPA's humanoid "Robotics Challenge", and are used to explore tunnels, mines and underground pipes. We also provide engineering services in design and development of custom robotic equipment and solutions.

THURSDAY, AUGUST 4

WORKSHOP

Introduction to the Robot Operating System (ROS)

Session Organizer: Brian O'Neil (LANL/Los Alamos National Laboratory)
Location: Haselton
8:00 am-2:00 pm

This workshop is an introduction to the Robot Operating System (ROS). Since 2009, ROS has become the de facto standard framework underlying a broad range of robotics applications from industrial machining operations to autonomous vehicles. This workshop is intended to be an introduction for those who are interested in learning more about ROS. The workshop will address the following questions:

- What is ROS?
- What are the benefits and limitations of ROS?
- Can I use ROS in my application?
- How do I get started with ROS?

The workshop includes a presentation that answers to these questions, outlines domain-relevant use cases, and culminates in hands-on ROS programming exercises. Participants can expect to leave the workshop with the knowledge they need to get started with ROS in their own applications. Participants will have the opportunity to develop ROS applications on their laptop during the workshop. Participants will have access to instructions for setting up their computer prior to the workshop. And organizers will provide "office hours" during the conference and prior to the workshop for anyone needing technical assistance. Note anyone interested in learning about ROS may participate and will walk away with a better understanding of its capabilities, but those with a prepared laptop, familiarity with Ubuntu, and some programming background will have the extra benefit of hands on experience.

THURSDAY, AUGUST 4

WORKSHOP

"US Environmental Protection Agency Superfund Radiation Risk Assessment Calculator Training"

Session Organizer: Stuart Walker (US EPA)
Location: Ellwood
8:00 am-3:00 pm

US EPA Superfund Radiation Risk Assessment is a full-day advanced course that focuses on specific technical and regulatory issues that site managers and technical staff address when managing sites under the US Environmental Protection Agencies Superfund remediation program that have a risk assessment conducted for radioactive contaminants. By taking the course, participants achieve the following objectives:

Learn a step-by-step approach to the Superfund remedial program risk assessment process for radioactive contamination. The course discusses of the major steps in Superfund remedial program risk assessment for radioactive contamination and the EPA recommended guidance documents and calculators and or models for conducting such risk assessments.

Explore methods for conducting site-specific risk assessments. The course examines how to alter the default input parameters in the Superfund remedial program risk and dose assessment calculators.

Discover practical recommendations for improving the radiation risk assessments conducted at your site. The course stresses some obvious and other less obvious aspects helpful in improving the radiation risk assessment process.

Master information about the radiation risk assessment process. Participants obtain information from experienced professionals about the radiation risk assessment process. *continued on next page >>*

WORKSHOP *(CONTINUED FROM P. 16)*

"US Environmental Protection Agency Superfund Radiation Risk Assessment Calculator Training"

Session Organizer: Stuart Walker (US EPA)
Location: Ellwood
8:00 am-3:00 pm

The instructional methodology for this course includes lectures and demonstrations of using EPA risk and dose assessment calculators developed by the Superfund remedial program. The target audience for this course is site managers, risk assessors and others that want to obtain a working knowledge on conducting Superfund radiation risk assessments.

Outline of Training

How Radiation Fits in Superfund
Radiation Risk Assessment
Radiation Risk Assessment Video and Community Toolkit
PRG Calculator
DCC Calculator
RSL Calculator
BPRG and BDCC Calculators
SPRG and SDCC Calculators
Differences between EPA and DOE Tools
BCG Calculator
CPM Calculator
SADA

PANELISTS
Stuart Walker (US Environmental Protection Agency)
Fred Dolislager (Oak Ridge National Laboratory)

THURSDAY, AUGUST 4

TECHNICAL TOUR

Westinghouse Waltz Mill and Churchill Facilities

Session Organizer: Benjamin C. Wong (Westinghouse)

8:00 am bus departs hotel; 5:00 p.m. return to hotel. Lunch included in fee.

Required attire: Slacks, shirts, and steel toed safety shoes. If you have no safety shoes, close toe/closed back shoes (no sandals or athletic shoes) are allowed and slip-over safety shoes will be provided to you.

Westinghouse's Waltz Mill facility in Madison, Pennsylvania is the global center of excellence for the company's outage services performed throughout the Americas and Asia. Employees are responsible for delivering predictable, successful results in reactor and steam generator services; shop, service center and training operations for rotating equipment, reactor coolant pumps and motors; and welding, machining and installation services.

The Westinghouse Churchill Site is a 12-acre facility located in Churchill, a suburb of Pittsburgh, Pennsylvania. It is located in the George Westinghouse Research and Technology Park. Materials characterization equipment, application-specific autoclaves, mechanical testing facilities, chemical processing facilitates and hot cells are among the high-tech features located at the Churchill Site.

Waltz Mill Agenda:

9:30 a.m. – Arrival/Check-in

9:45 a.m. – Introduction/Briefing

10:00 – 10:50 a.m.

Group 1: Tour of "C" Bay – Steam Generator Channel Heads and typical Steam Generator Services: Manway removal, nozzle dam installation, eddy current inspection, tube repair and plugging.

Group 2: Tour of "D" Bay – Reactor Vessel Head (stud tensioners, instrumentation conoseals), Reactor Coolant Pump (motor, pump, seals), Fuel Handling (tools, refueling bridge, upenders, fuel transfer canal)

10:50 – 11:00 a.m. – Transition between locations

11:00 – 11:50 a.m.

Group 1: Tour of "D" Bay

Group 2: Tour of "C" Bay

11:50 – 12:00 p.m. – Final remarks

Churchill Site Agenda:

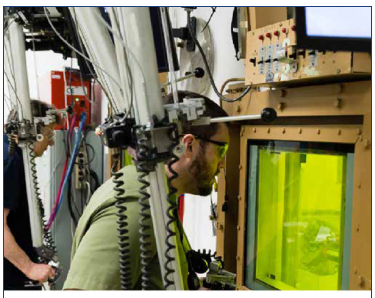
1:30 p.m. – Arrival/Check-in

1:30 – 1:45 p.m. – Introduction/Briefing

1:45 – 1:55 p.m. – Radiological briefing for Hot Cell area.

1:55 – 2:00 p.m. – Tour of Site

3:00 p.m. – Tour Completion



Westinghouse Churchill Site
Pittsburgh, Pennsylvania

Westinghouse Waltz Mill facility
Madison, Pennsylvania

Westinghouse Waltz Mill facility
Madison, Pennsylvania

MONDAY, AUGUST 1
TECHNICAL SESSIONS - 1:15 PM

Remote Tools and Processes
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Chris C. Eason (Souriau), Steven W. Shaw (NuScale Power)
Location: Grand Station V **Time:** 1:15-2:15 pm

1:15 pm
Development of a Virtual 3D Simulator to Evaluate Remote Operations in PRIDE, Dongseok Ryu, Sunghyun Kim, Jonghui Han, Jongkwang Lee, Kiho Kim (KAERI)

1:45 pm
Remote Camera Assemblies for Viewing Interior Regions of Process Pipe, Jeffrey T. Coughlin (SRNL)

Break 2:45-3:00 pm

Robotics and Remote Operations in Hazardous Facilities—I
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Rodrigo Rimando (DOE), Steven L. Tibrea (SRNL)
Location: Grand Station V **Time:** 3:00-5:00 pm

3:00 pm
Virtual Decommissioning Simulator for Preliminary Verification of Dismantling Scenarios over Nuclear Facilities, Byung-Seon Choi, Dongjun Hyun, Ikjune Kim, Jonghwan Lee, Jeikwon Kwon Moon (KAERI)

3:30 pm
Robotic Challenges and Deployments in an Active Fume Exhaust Tunnel, Steven Tibrea, Luther Reid, Eric Kriikku (SRNL)

4:00 pm
Motion Constrained Control of 6-DOF Manipulator for Remote Dismantling Operations over Nuclear Facility in Virtual Decommissioning Simulator, Dongjun Hyun, Byung-Seon Choi, Jeikwon Moon (KAERI)

4:30 pm
Development of a Dismantling Manipulator for a Nuclear Reactor, Hocheol Shin, Chang-hoi Kim, Yong-chil Seo, Myoungho Kim, Byung-seon Choi (KAERI)

U.S. Commercial Decommissioning Projects
Session Organizer: Sue Aggarwal (NMNTI)
Cochairs: Lynne Goodman (DTE Energy), Leonel E. Lagos (Florida International Univ)
Location: Fountainview **Time:** 1:15-2:45 pm

1:15 pm
Application of an Integrated Approach to Achieve Best-in-Class Safety, Security and Safeguards Standards for 21st Century DDER, Mark Campagna (Retired), Walter Sawruk (ABSG Consulting), Joseph Scerbo (Sargent & Lundy)

1:45 pm
The *EnergySolutions* Decommissioning Model, Gerard van Noordennen (EnergySolutions)

2:15 pm
Evaluating a Radiological Site Conceptual Model using Both RESRAD and Modflow, Gerald Williams, Luis Bastidas, Jeff Laughlin, Todd Brautigam (ENERCON Services)

Break 2:45-3:00 pm

Technical Sessions: Monday August 1

MONDAY, AUGUST 1

TECHNICAL SESSIONS - 1:15 PM

International Decommissioning Projects

Session Organizer: Sue Aggarwal (NMNTI)
Cochairs: Lynne Goodman (DTE), Leonel E. Lagos (Florida International Univ)
Location: Fountainview **Time:** 3:00-4:30 pm

3:00 pm
New PPE Coveralls Technology Advances Comfort and Protection, Mark E. Dieterle (Quest Environmental & Safety Products, Inc.)

3:30 pm
Decommissioning Initiative on Commercial Nuclear Powers Plant in Japan, Masayoshi Higashi, John Hubball (Westinghouse)

4:00 pm
Westinghouse DD&WM Activities in EMEA (Europe, Middle East and Africa), Alejandro Rodriguez Fernandez, Joseph Boucau (Westinghouse Electric Spain)

Decommissioning and Decontamination Technology Developments

Session Organizer: Sue Aggarwal (NMNTI)
Cochairs: Mark Lewis (Energy Solutions), Nadia Glucksberg (Haley & Aldrich, Inc.)
Location: Ellwood **Time:** 1:15-4:00 pm

1:15 pm
Comparison of PWR and BWR FSDs Performed Prior to Decommissioning in Germany, Kayla Harper (AREVA Inc.), Christian Topf (AREVA GmbH)

1:45 pm
EPRI Decommissioning Program Report: Characterization and Remediation of Contaminated Concrete, Richard Reid, Richard McGrath (EPRI), invited

2:15 pm
The Role of Innovation in Decommissioning, Kathleen M. Posteraro (Westinghouse)

Break 2:45-3:00 pm

3:00 pm
GrayQb™ Single-Faced Version 2 (SF2) Hanford Plutonium Reclamation Facility Radiological Examination, Jean R. Plummer, David M. Immel, Michael G. Serrato, Michael J. Dalmaso, Thomas A. Nance (SRNL)

3:30 pm
Automated Radioactive Waste Class Mapping for Nuclear Plant Decommissioning Projects, Timothy M. Lloyd, Benjamin W. Amiri (Westinghouse)

MONDAY, AUGUST 1
TECHNICAL SESSIONS - 1:15 PM

ROS–The Robot Operating System Panel
Session Organizer: Brian E. O'Neil (LANL)
Cochairs: Brian E. O'Neil (LANL), Mitch W. Pryor (Univ of Texas at Austin)
Location: Haselton **Time:** 1:15-2:45 pm

The Robot Operating System (ROS) is a set of software libraries and tools for building robot applications. It includes common hardware drivers, many state-of-the-art algorithms, and powerful developer tools that facilitate scalable collaboration and debugging. ROS is open source and has rapidly become the de facto development environment developing cutting edge robotic capabilities in academia and increasingly in industry as well. Thus ROS has the opportunity to ease the adoption of advanced robotic capabilities across the DOE and nuclear industry complex, even as it raises new concerns related to software certification and safety. Three panelists will discuss ROS, how these challenges can be addressed for the manufacturing industry, and preliminary applications using ROS at Los Alamos National Labs.

Panelists:
Brian O'Neil (LANL)
Morgan Quigley (Open Source Robotics Foundation)
Paul Hvass (Southwest Research Inst)

Break 2:45-3:00 pm

Fukushima–Remote Applications
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Jessica Stiles (Univ of Tennessee, Knoxville) Mark W. Noakes (ORNL)
Location: Haselton **Time:** 3:00-4:30 pm

3:00 pm
Government-Supported Validation of Technologies for Decommissioning and Contaminated Water Management, Kenichi Ando, Haru Hashizume, Shoko Yashio (Obayashi Corp.)

3:30 pm
Analysis of Emergency Response Robots Deployed for Fukushima Daiichi Nuclear Power Plants' Accidents, Shinji Kawatsuma, Kuniaki Kawabata, Yoshihiro Tsuchida, Yuta Tanifuji (JAEA)

4:00 pm
Development of Fukushima 1F-3 Spent Fuel Removal System, John M. Hubball, Masayoshi Higashi (Westinghouse)

Technical Sessions: Tuesday August 2

TUESDAY, AUGUST 2

TECHNICAL SESSIONS - 8:00 AM

Robotics and Remote Operations in Hazardous Facilities—II

Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Byung Choi (KAERI), Thomas A. Nance (SRNL)
Location: Grand Station V **Time:** 8:00-11:45 am

8:00 am
Development of Remote Operated Vehicle Prototype for Dry Stainless Steel Storage Canister for Used Nuclear Fuel, Stephen Canfield, Jamie Beard, Steve Glovsky (Tennessee Technological Univ)

8:30 am
Robotic System for Retrieval of Contaminated Materials from Hazardous Zones—A Project of the UK-Korea Civil Nuclear Collaboration Program, Rustam Stolkin (Univ of Birmingham), Jae-Hee Kim (KAERI), Ales Leonardis (Univ of Birmingham), Jae-Cheol Lee (KAERI), Michael Mistry (Univ of Birmingham), You-Rack Choi (KAERI) Jeffrey Kuo (NNL)

9:00 am
Calculating Neutron Damage in a Robotic Manipulator, Joseph Hashem (LANL), Sheldon Landsberger, Mitch W. Pryor, (Univ of Texas, Austin)

9:30 am
Development of Surveying Robotic Systems at High Pipe Structures with a Visual-Based Pole Climbing Robot, Jae-Hee Kim, Jae-Cheol Lee, You-Rack Choi, Ho-Cheol Shin (KAERI), Rustam Stolkin (Univ of Birmingham)

Break 10:00-10:15 am

10:15 am
Evaluation of a Mobile Welding Platform for Remotely Operated Repairs, Stephen Canfield, Stephen Zuccaro (Tennessee Technological Univ)

10:45 am
Quantification of Safety Benefits Associated with Disaster Robots, Young Choi, Kyungmin Jeong (KAERI), Inn Seock Kim (ISSA Technology, Inc.)

11:15 am
Autonomous Inventory in Nuclear Environment using a Remote Platform, Blake Anderson, Meredith Pitsch, Selma Wanna, David Park, Sheldon Landsberger, Mitch W. Pryor (Univ of Texas, Austin)

TECHNICAL SESSIONS - 8:30 AM

Project Infrastructure and Regulatory Criteria

Session Organizer: James J. Byrne (Byrne & Associates)
Cochairs: Gerald P. van Noordennen (EnergySolutions), Jay Peters (Haley & Aldrich, Inc.)
Location: Ellwood **Time:** 8:30-10:00 am

8:30 am
Use of Probabilistic Tools for Decommissioning Risk Analysis and Planning, Eric L. Darois (RSCS Inc.), David Vose, Timour Koupeev (Vose Software BVBA)

9:00 am
Proposed Formula for the D&D Regulatory Process, John McInerney (Westinghouse), Susan Strachan (Strachan Consulting)

9:30 am
End-State Planning—A Key Part of the Decommissioning Process, Eric L. Darois (RSCS Inc.)

Break 10:00-10:15 am

TUESDAY, AUGUST 2
TECHNICAL SESSIONS - 8:30 AM

Waste Management Technology Developments
Session Organizer: James J. Byrne (Byrne & Associates)
Cochairs: Gerald P. van Noordennen (EnergySolutions), Jay Peters (Haley & Aldrich, Inc.)
Location: Ellwood **Time:** 10:15-11:15 am

10:15 am
Integrating ScanSort℠ Technology in the Interim Storage Facility Process Design, Jeffrey Lively, Robert Posner (Amec Foster Wheeler), Masaru Noda (Obayashi Corp.)

10:45 am
Molecular Separation for an Innovative Radioactive Liquid Waste Treatment, Adriano Marin (WOW TECHNOLOGY S.p.A.)

Final Status Survey and Radiation Measurement
Session Organizer: Sue Aggarwal (NMNTI)
Cochairs: Lansing Dusek (Fluor), Douglas Davis (DAD Solutions, LLC)
Location: Fountainview **Time:** 8:30-11:15 am

8:30 am
Digital Autoradiography Technique an Efficient Tool for Sampling Procedure, Pascal Fichet, Raphaël Haudebourg, Caroline Mougel (CEA, Saclay)

9:00 am
Superfund Radiation Risk Assessment Update: New, Revised, and Upcoming Tools, Stuart Walker (U.S. EPA)

9:30 am
Fast and Safe Handling of Contaminated Soils and Wastes at Interim Storage, Atsuo Suzuki, Keisuke Kitahata (Canberra Japan KK), Masaru Noda (Obayashi Corp.)

Break 10:00-10:15 am

10:15 am
EPRI Decommissioning Program Report: Review of Geostatistical Approaches to Characterization of Subsurface Contamination, Richard Reid, Richard McGrath (EPRI), invited

10:45 am
Increased Gamma Scanning Productivity and Data Evaluation using Large Crystal Sodium Iodide Detectors, Tina Piquet, Jeffrey Guillory, John Hackett (CB&I)

Technical Sessions: Tuesday August 2

TUESDAY, AUGUST 2

TECHNICAL SESSIONS - 8:00 AM

Advanced Topics in Robotics and Teleoperation

Session Organizer: Dr. Mark W. Noakes (ORNL)
Cochairs: Dr. Hochel Shin (KAERI), Mark W. Noakes (ORNL)
Location: Haselton **Time:** 8:00-11:45 am

8:00 am
Pelvis Mechanism for Multi-Locomotion Robot in Nuclear Plant, Byungho Yoon (KAIST), You Hyun Jang (Korea Hydro & Nuclear Power Co., Ltd.), Soohyun Kim (KAIST)

8:30 am
Demonstrating Autonomous and Robust Sorting in a Glovebox Environment, Adam Allevato, Matthew W. Horn, Mitch Pryor (Univ of Texas, Austin)

9:00 am
Visual Inertial Perception for Autonomous Inspection in Nuclear Power Plants, Shobhit Srivastava, Nathan Michael (Carnegie Mellon Univ), Lyman J. Petrosky (Westinghouse)

9:30 am
Variable Normal Surface Virtual Fixtures (VNSVF) for Semi-Autonomous Task Completion, Andrew Sharp, Mitch Pryor (Univ of Texas, Austin)

Break 10:00-10:15 am

10:15 am
Demonstrations of a Generalized Contact Control Framework: Follow-the-Leader and Grasping/Inserting a Peg in a Hole, Alexander von Sternberg, Mitch Pryor (Univ of Texas, Austin)

10:45 am
Intelligent Navigation of a Skid Steer Dual-Arm Mobile Manipulator with Dynamic Center of Gravity, Benjamin J. Ebersole, Mitch Pryor (Univ of Texas, Austin)

11:15 am
Characterizing Glovebox Automation Tasks using Partially Observable Markov Decision Processes, Adam Allevato, Mitch Pryor (Univ of Texas, Austin)

TUESDAY, AUGUST 2
TECHNICAL SESSIONS - 2:15 PM

Robotics and Remote Operations in Hazardous Facilities—III
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Steven L. Tibrea (SRNL), Mark W. Noakes (ORNL)
Location: Grand Station V **Time:** 2:15-5:00 pm

2:15 pm
Development of a Peristaltic Crawler for the Inspection of the High Level Waste Tanks at Hanford, Anthony Abrahao, Erim Gokce, Dwayne McDaniel (Florida International Univ)

2:45 pm
Development of a Miniature Inspection Tool for the AY-102 Double-Shell Tank at the Hanford DOE Site, Hadi Fekrmandi, Ryan Sheffield, Michael DiBono, Dwayne McDaniel (Florida International Univ)

3:15 pm
Modeling of Climbing Robots on Non-Planar Surfaces, Padmanabhan Kumar, Stephen L. Canfield, Joshua Qualls, (Tennessee Technological Univ)

Break 3:45-4:00 pm

4:00 pm
The Effectiveness of Collision Detection for Human-Robot Interaction in a Glovebox Environment, Kyle Schroeder (SpringActive, Inc.), Troy Harden (LANL), Mitch Pryor (Univ of Texas, Austin)

4:30 pm
Fukushima and Chernobyl—A Slideshow of TensileTruss™ Enabled D&D Technology, Rob Owen (PaR Systems, Inc.)

Capturing Best Practices and Other Lessons Learned
Session Organizer: James J. Byrne (Byrne & Associates)
Cochairs: Alejandro Rodriguez (Westinghouse), Dustin Miller (Chase Environmental Group)
Location: Ellwood **Time:** 2:15-5:00 pm

2:15 pm
Transitioning from Operations to Decommissioning; A Benchmarking Effort, Joseph Carignan (Carignan & Associates Llc.)

2:45 pm
Recent Achievements in the Decommissioning of the Research Reactor WWR-S from IFIN-HH, Magurele, Romania, Cristian A. Dragolici, Adrian Zorliu (IFIN-HH)

3:15 pm
Positioned for Success—A Training Program for Effective and Efficient Implementation of Facility Decommissioning, Lawrence E. Boing (ANL)

Break 3:45-4:00 pm

4:00 pm
Rock Durability Lessons Learned at Uranium Mill Tailings and Complex Sites, Zahira Cruz, Robert Johnson, Matthew Meyer (NRC)

4:30 pm
Integrating MARSSIM with Decommissioning Planning, Dustin G. Miller (Chase Enviromental Group, Inc.)

Technical Sessions: Tuesday August 2

TUESDAY, AUGUST 2

TECHNICAL SESSIONS - 2:15 PM

U.S. Environmental Protection (EPA) and U.S. Department of Energy (DOE) Panel on the Use of Risk and Dose Assessment Tools

Session Organizer: Stuart A. Walker (EPA)
Cochairs: Stuart Walker (EPA), Amanda Anderson (DOE)
Location: Fountainview **Time:** 2:15-3:45 pm

This panel discussion will include representatives from U.S. EPA Office of Superfund Remediation and Technology Innovation (OSTRI), U.S. DOE Office of Deactivation and Decommissioning (D&D) Facility Engineering in the Office of Environmental Management. It will focus on the various guidance from the two agencies on how tools such as the Preliminary Remediation Goals (PRG) calculator, the Dose Compliance Concentrations (DCC) calculator, and Residual Radioactivity (RESRAD) should be used in environmental cleanup activities.

Panelists:
Robert Seifert (Office of Environmental Management, DOE)
Amanda Anderson (Representing the Office of Decommissioning and Deactivation & Facility Engineering, DOE)
Stuart Walker (Office of Superfund and Technology Innovation, U.S. EPA)

Remote Sensing and Robotic Platforms

Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Richard L. Minichan (SRNL), Young Park (ANL)
Location: Haselton **Time:** 2:15-3:45 pm

2:15 pm
A Ground Vehicle for Monitoring Nuclear Accidents, Jongwon Park, Young-Soo Choi, Kyung-min Jeong (KAERI)

2:45 pm
Accurate and Reliable 3D Sensing and Reconstruction for Teleoperation, Young Soo Park (ANL), Xiaorui Zhao (Univ of Illinois, Chicago), Zhengyu Xia, Joohee Kim (IIT)

3:15 pm
GrayQb™ Deployment Device for the Hanford Plutonium Reclamation Facility, Michael J. Dalmaso, Davis J. Shull, Jean R. Plummer, David M. Immel, Michael G. Serrato (SRNL)

Break 3:45-4:00 pm

Telerobotics

Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Young Park (ANL), Steven W. Shaw (NuScale Power)
Location: Haselton **Time:** 4:00-5:00 pm

4:00 pm
Spatially-Mapped Human-Robot Interface for Teleoperation of High-Precision Tasks, Karl Kruusamae, Jack Thompson, Mitch Pryor (Univ of Texas, Austin)

4:30 pm
Augmented Remote Operation, Young Soo Park (ANL), Xiaorui Zhao (Univ of Illinois, Chicago), Pawel Dworzanski (Univ of Illinois, Urbana Champaign), Mathew Trefilek (Northern Michigan Univ), Zhengyu Xia, Joohee Kim (IIT)

WEDNESDAY, AUGUST 3
TECHNICAL SESSIONS - 8:30 AM

Robotics and Remote Operations in Hazardous Facilities—IV
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Luke T. Reid (SRNL), Richard L. Minichan (SRNL)
Location: Grand Station II **Time:** 8:30-10:45 am

8:30 am
Operability and Remote Maintainability of the Large Equipment Transfer Lock System in PRIDE Argon Cell, Jonghui Han, Ilje Cho, Jongkwang Lee (KAERI)

9:00 am
Remote Sampling of Failed Spallation Neutron Source Targets, M. W. Noakes, M. J. Dayton, S. P. Parson (ORNL)

9:30 am
Robotics for Deactivation and Decommissioning, Leonel E. Lagos, Peggy Shoffner, Himanshu Upadhyay (Florida International Univ)

Break 10:00-10:15 am

10:15 am
Development of Radiation Resistant Camera System, T. Takeuchi, N. Otsuka (JAEA), T. Watanabe (Brookman Technology, Inc.), T. Kamiyanagi, H. Komanome (Ikegami Tsushinki Co., Ltd.), S. Ueno (Tokyo Nuclear Services Co., Ltd.), K, Tsuchiya (JAEA)

Special Topics in Robotics and Teleoperation
Session Organizer: Mark W. Noakes (ORNL)
Cochairs: Steven L. Shaw (NuScale Power), Jessica Stiles (Univ of Tennesse, Knoxville)
Location: Haselton **Time:** 8:30-11:45 am

8:30 am
School Robotics Programs, Annamarie H. MacMurray (SRNL)

9:00 am
Analysis of the Energy Efficiency of Active Elastic Energy Storage by DC Motors for Improving the Power of Emergency Response Robots in Nuclear Accidents, Sun Young Noh, Youngsoo Choi, Kyungmin Jeong (KAERI)

9:30 am
Evaluation of Radiation Resistant In-Water Transmission System Using LED and Camera, Noriaki Otsuka, Tomoaki Takeuchi, Kunihiko Tsuchiya (JAEA), Taro Shibagaki, Hiroshi Komanome (Ikegami Tsushinki Co., Ltd), Kunihiko Tsuchiya (JAEA)

Break 10:00-10:15 am

10:15 am
Autonomous Inspection of Nuclear Reactor Pressure Vessels via a Remotely Operated Vehicle, Timothy E. Lee, Nathan Michael (Carnegie Mellon Univ), Lyman J. Petrosky (Westinghouse)

10:45 am
Adhesive Technology using Crawlers and Manipulator Application, Georg Kraemer (AREVA GmbH), Kayla Harper (AREVA, Inc.)

11:15 am
Exhaust Shaft Inspection at the DOE WIPP Site, Guangying Jiang , Praveen Abbaraju, Richard Voyles (Purdue Univ)

Technical Sessions: Wednesday August 3

WEDNESDAY, AUGUST 3
TECHNICAL SESSIONS - 8:30 AM

Decommissioning and Environmental Session

Session Organizer: James J. Byrne (Byrne and Associates)
Cochairs: Laurence E. Boing (ANL), Joseph E. Carignan (Carignan and Associates)
Location: Ellwood **Time:** 8:30-11:15 am

8:30 am
PHENIX Sodium Secondary Loops Sodium Processing, F. Dominjon, J. P. Grandjean, F. Laurent (CEA)

9:00 am
CFD Analysis of Dry Spent Fuel Storage with Advanced Neutron Absorber under Normal Condition, Hee-Jae Lee, Mi Jin Kim, Gwan Yoon Jeong, Tae Won Cho, Cheol Min Lee, Ji-Hyeon Kim, Dong-Seong Sohn (UNIST)

9:30 am
Superfund Evolving Adjustments to External Slope Factors for Risk Assessments, Stuart Walker (U.S. EPA)

Break 10:00-10:15 am

10:15 am
Eighteen Years of Safe Storage and Counting, Rick Moren (Mission Support Alliance), Mark R. Morton (Polestar Technical Services)

10:45 am
Decommissioning an Oil and Gas Waste Water Treatment Facility with Known Impacts from Naturally Occurring Radioactive Material, Christopher Weddermann, Alejandro U. Lopez (Amec Foster Wheeler)

FIRST (For Inspiration and Recognition of Science and Technology) is a 501(c)(3) not-for-profit public charity that designs accessible, innovative programs that inspire young people to pursue education and career opportunities in science, engineering, technology, and math, while building self-confidence, knowledge, and life skills.

Each year *FIRST* presents the teams with a challenge specific to their program level. As examples at the FRC level, the challenges have included throwing basketballs and balancing robots on bridges (2012) and throwing Frisbee-like discs and climbing a tube pyramid (2013). While during some of the competition the robots are remote control assisted, these timed competitions include periods when the robots have to operate entirely on their own.

Founded by inventor Dean Kamen 25 years ago in Manchester, NH, *FIRST* has grown to reach over 400,000 youth in the US and internationally in the 2014/15 season. For more info, visit the FIRST website: http://www.firstinspires.org/.

Pittsburgh area FIRST teams are participating in the exhibit area:

Team 3955 4H GEARS

Team 4467 - Titanium Titans Robotic

Team 3504 - Girls of Steel

Team 3260 - SHARPS

Team 2656 - Quasics

Exhibitors

American DND, Inc.
Grand Island, NY (Booths 9 & 10)
A national Service Disabled Veteran Owned Small Business Decommissioning company and Management Team with extensive "Lessons Learned" from performing over $600M of D-'n'-D Work at over 500 projects. Celebrating 12 years and over 325,000 MH with a "ZERO" Safety Rating across the board. Please stop by the booth to discuss how our "Lessons Learned" can be applied to your next Project.

Brokk
Santa Fe, NM (Booth 14)
BROKK remotely operated machines are the nuclear industry standard for remote operations, used worldwide in the most challenging applications at nuclear facilities for over 30 years. With many innovative BROKK features such as our remote tool change interface, a single BROKK machine can safely deploy multiple high productivity tools. www.brokk.com/us

Chase Environmental Group, Inc.
Troy, IL (Booth 19)
Chase Environmental Group, Inc. is a full-service, decontamination, decommissioning, remediation, and waste management firm, providing safe, high quality, practical, cost effective solutions to your environmental needs. Chase's decommissioning services includes MARSSIM planning and implementation, decommissioning cost estimates, decommissioning plan development, dose modeling, regulatory negotiations, remediation, waste management, and project management.

Energy*Solutions*
Wexford, PA (Booth 13)
EnergySolutions is an international nuclear services company with 1,000 professionals providing integrated services to the nuclear industry. We offer a proven and successful D&D management model, incorporating 20 years of lessons learned. Energy*Solutions* is the global leader in the safe recycling, processing and disposal of nuclear material, providing state-of-the-art solutions for government agencies, nuclear power plants worldwide and various medical and research facilities.

Mega-Tech Services, LLC
Mechanicsville, VA (Booth 11)
Mega-Tech Services, LLC provides a complete line of high pressure hydraulic tools including Guillotine Cutters, Scissor Cutters, Crushers, Crimpers, Pipe Punches, Sampling, Spreaders, and Grapplers. We offer extensive expertise in specialty or custom tooling applications for nuclear maintenance and decommissioning projects. Mega-Tech Services, LLC is a woman-owned small business providing services to the nuclear industry in both domestic and International markets for over 20 years.

Radiation Safety & Control Services, Inc.
Stratham, NH (Booth 15)
Established in 1989, RSCS, Inc. is a small business that offers expertise in all aspects of radiation safety and measurement applications. Our company specializes in operational and decommissioning services for nuclear power plants as well as for industrial, medical, and government radiological facilities. Our core services include health physics consulting, technical staffing, training, instrumentation (including sales, installation, calibration, and repair), emergency planning, and specialized radiological characterizations and measurements.

Radwaste Solutions
La Grange, IL (Booth 18)
Radwaste Solutions magazine provides dedicated coverage of the specialized decommissioning and waste management segments of the nuclear industry. Editorial features include the generation, handling, treatment, cleanup, transportation, storage, and disposal of radioactive waste. Published by the American Nuclear Society since 1994, we invite you to Advertise or Subscribe today.

RE2 Robotics
Pittsburgh, PA (Booth 21)
RE2 Robotics is a leading developer of next generation robotic manipulator arms that enable robots to better interact with the world. RE2 designs robust modular manipulators and humanlike dual-arm robotic systems with easy-to-use imitative controls that enable personnel to perform dangerous and complex tasks at a safe distance. For more information visit www.resquared.com

Savannah River National Laboratory
Aiken, SC (Booth 12)
The Savannah River National Laboratory is a multi-program applied research and development laboratory for the U.S. Department of Energy. SRNL applies state-of-the-art science and engineering to provide practical, high-value, cost-effective solutions for our nation's environmental cleanup, nuclear security and clean energy challenges.

Westinghouse Electric Company
Madison, PA (Booth 25 & 26)
Westinghouse provides the most reliable, dependable nuclear power plants, nuclear fuel, nuclear plant automation and operating plant products and services. Our vision is simple -- to be the first to innovate the next technology, practice or solution that helps us help customers generate safer, cleaner, more reliable energy for more people and a better planet.

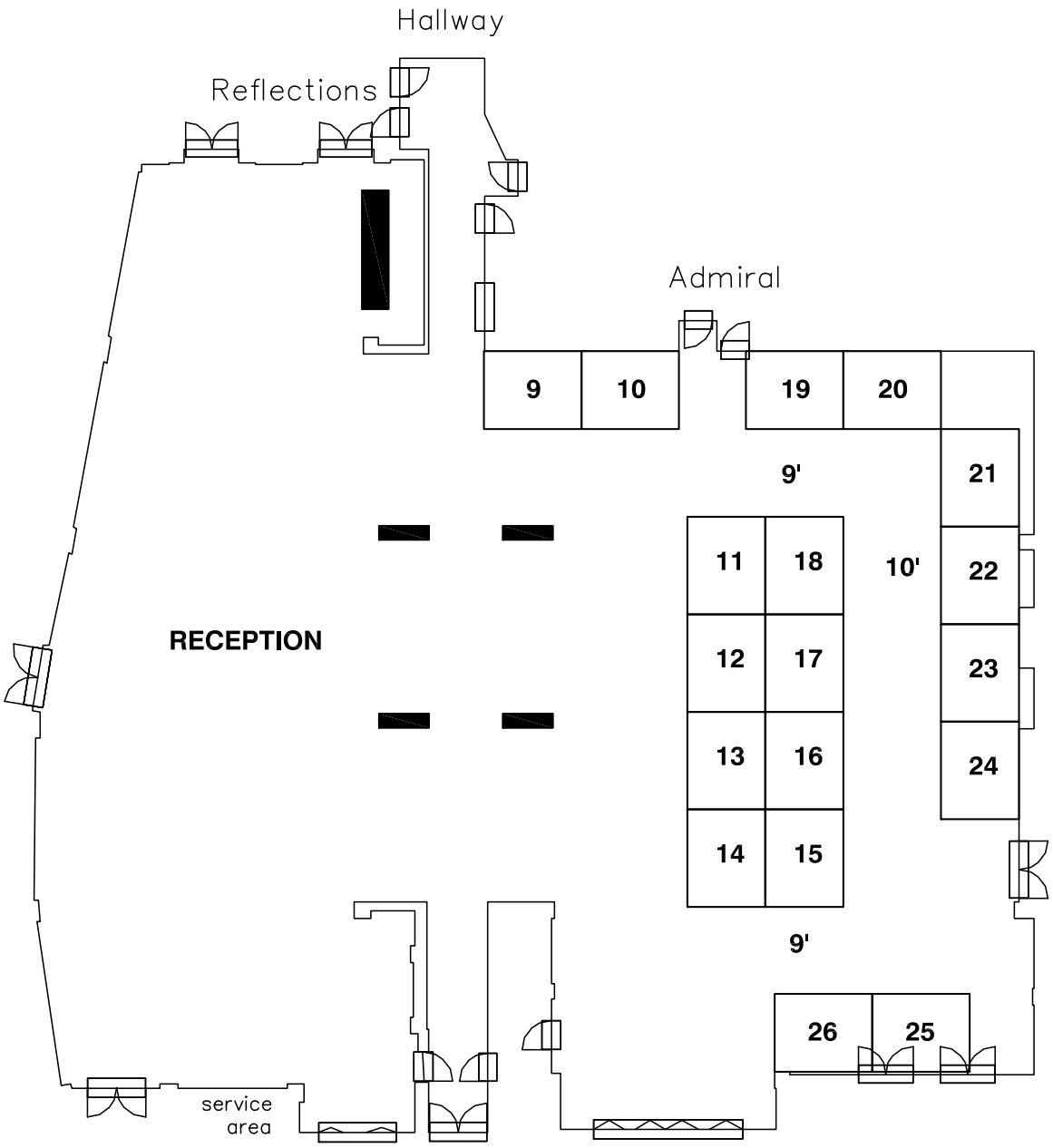
Exibitor Floor Plan

SHERATON STATION SQUARE HOTEL

ANS D&RS 2016

Reflections/Admiral Halls

First Floor



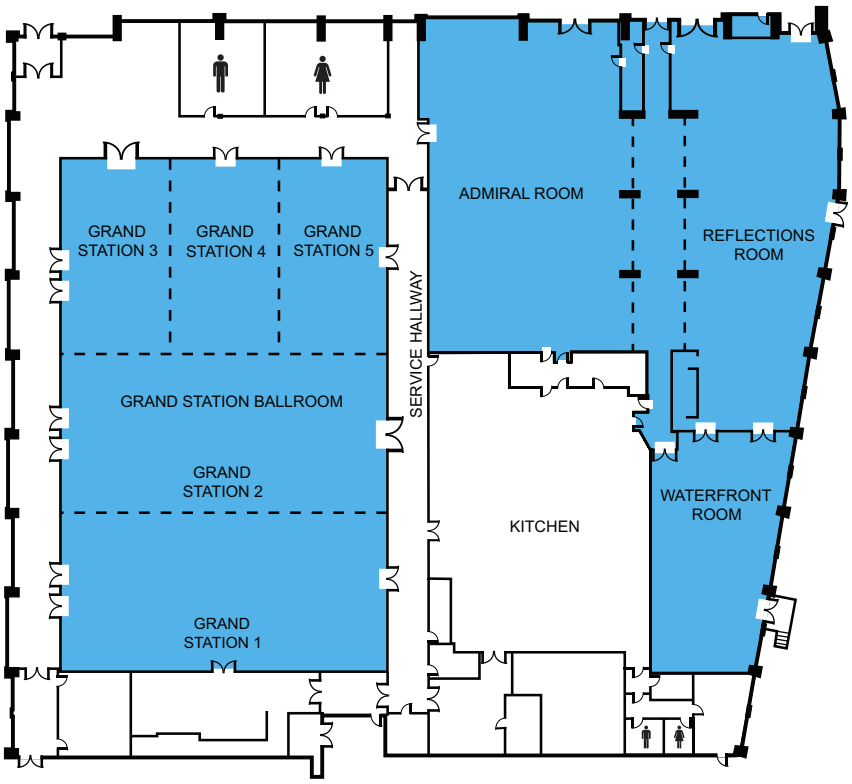
REGISTRATION

Hotel Floor Plan

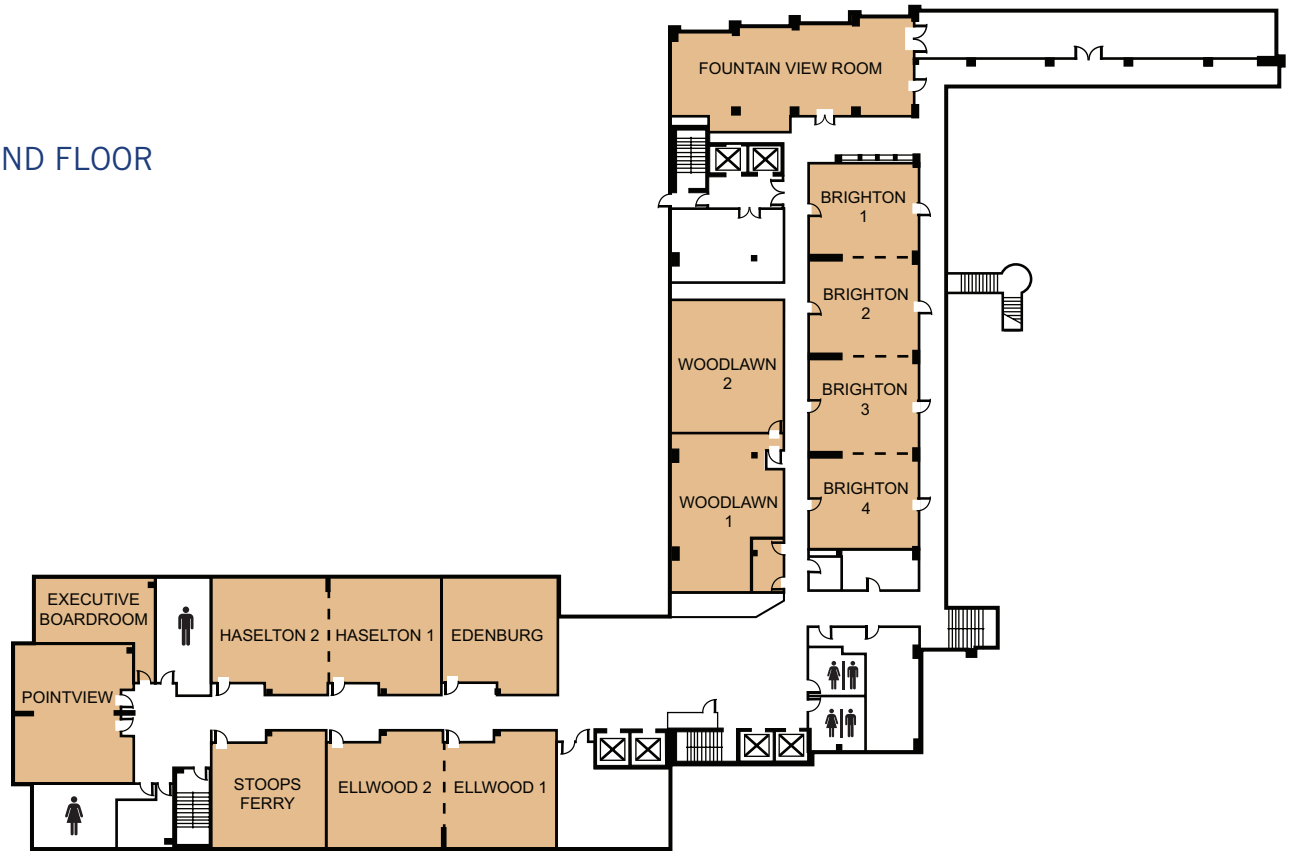
HOTEL LOBBY AREA

REGISTRATION

FIRST FLOOR



SECOND FLOOR



ANS D&RS 2016

Decommissioning and Remote Systems

July 31-August 4, 2016
Sheraton Station Square
Pittsburgh, PA

American Nuclear Society
555 N. Kensington Ave.
La Grange Park, IL 60526

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