LWR Fuel Performance Meeting

TopFuel 2013

September 15 - 19, 2013

Preliminary Program

Charlotte, NC, USA

Westin Charlotte Hotel
CONTRIBUTING ORGANIZATIONS

The organizations listed below have made an outstanding contribution to the success of the LWR Fuel Performance Meeting TopFuel 2013 and to the enjoyment of the attendees and their guests through their generous sponsorship.

Sunday, September 15, 2013
Welcome Reception: AREVA

Monday, September 16, 2013
Breakfast/Coffee: Enusa Industrias Avanzadas
Lunch: Structural Integrity Associates
Afternoon Coffee: Duke Energy
Poster Reception: Electric Power Research Institute, Inc. and ORNL

Tuesday, September 17, 2013
Breakfast/Coffee: B&W mPower
Lunch: Studsvik Nuclear and Studsvik Scandpower
Afternoon Coffee: Still Available

Wednesday, September 18, 2013
Breakfast/Coffee: SCANA
Lunch: Global Nuclear Fuel

Additional Sponsors
Nuclear Safety Associates
NETZSCH Instruments North America, LLC

Thank You!

The Electric Power Research Institute, Inc. (EPRI, www.epri.com) conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and the environment. EPRI’s members represent approximately 90 percent of the electricity generated and delivered in the United States, and international participation extends to more than 30 countries.
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting Officials</td>
<td>4</td>
</tr>
<tr>
<td>Technical Program Members</td>
<td>5</td>
</tr>
<tr>
<td>Meeting Schedule</td>
<td>6-7</td>
</tr>
<tr>
<td>Meeting Information and Special Events</td>
<td>8-9</td>
</tr>
<tr>
<td>Welcome Message</td>
<td>10</td>
</tr>
<tr>
<td>Monday Technical Sessions</td>
<td>11</td>
</tr>
<tr>
<td>Tuesday Technical Sessions</td>
<td>12</td>
</tr>
<tr>
<td>Wednesday/Thursday Technical Sessions</td>
<td>13</td>
</tr>
<tr>
<td>Advance Conference Registration Form</td>
<td>13-14</td>
</tr>
</tbody>
</table>
LWR Fuel Performance Meeting  
TopFuel 2013  
Achieving excellence beyond 0 by 2010  
Charlotte, NC • Westin Charlotte Hotel  
September 15 – 19, 2013

EXECUTIVE COMMITTEE

GENERAL CO-CHAIR:  
Mr. David C. Culp  
Duke Energy

GENERAL CO-CHAIR:  
Mr. José Emeterio Gutiérrez  
Westinghouse Electric Company

FINANCE CHAIR:  
Mr. Jeffrey L. Bradfute  
Westinghouse Electric Company

PLENARY CHAIR:  
Ms. Michele DeWitt  
Westinghouse Electric Company

EXECUTIVE COMMITTEE MEMBERS

Mr. Jeff Deshon  
EPRI

JT Kwon  
KNFC

Ms. Danielle Urbina (ANS)  
Ms. Gale Hauck (Westinghouse)  
Ms. Kathy Szlis (Westinghouse)

Ms. Lisa Alicia (ANS)  
Mr. Sumit Ray (Westinghouse)  
Ms. Judy Pavlecic (Westinghouse)

TopFuel 2013  
Conference  
Achieving excellence  
beyond 0 by 2010

Purpose: TopFuel’s primary objective is to bring together leading specialists in the field from around the world to analyze advances in nuclear fuel management technology and to use the findings of the latest cutting-edge research to help manufacture the high-performance nuclear fuels of today and tomorrow.
TECHNICAL PROGRAM MEMBERS

TECHNICAL PROGRAM CHAIR:
Mr. Zeses E. Karoutas
Westinghouse Electric Company

ASSISTANT TECHNICAL PROGRAM CHAIR:
Dr. Peng Xu
Westinghouse Electric Company

Ms. Clara Anghel, (GE-Hitachi)
Mr. Paul Bailey, (Duke)
Mr. Chris Comfort, (Southern)
Ms. Florin Curca-Tivig, (AREVA)
Mr. Alex Dolgov, (TVEL)
Mr. Bob Einziger, (NRC/US)
Mr. Norman Garner, (AREVA)
Mr. Kenneth Geelhood, (PNNL)
Dr. Jess Gehin, (DOE)
Dr. Lars Hallstadius, (Westinghouse)
Mr. Charles Heck, (GNF)
Mr. William Herwig, (SCANA)
Ms. Nadine Hollasky, (Bel V)
Mr. Jim Hoerner, (Be&W)
Mr. Clive Ingram, (Office of Nuclear Regulation)
Mr. Victor Inozemtsev, (IAEA)
Dr. John Jones, (Office of Nuclear Regulation)
Dr. Atul Karve, (GNF)
Mr. Koji Kitano, (Toshiba)
Dr. Travis Knight, (USC)
Mr. Keizo Matsuura, (NFI)
Mr. Vaclav Mecir, (CEZ)
Dr. Mitch Meyer, (INL)

Mr. Pierre Molland, (AREVA)
Mr. Rob Montgomery, (PNNL)
Mr. Jeff Morris, (AREVA)
Mr. Shinji Ono, (Westinghouse/NFI)
Mr. Manuel Quecedo, (ENUSA)
Mr. Sumit Ray, (Westinghouse)
Mr. Tony Reese, (GNF)
Mr. Michael Reitmeyer, (Exelon)
Mr Javier Riverola, (ENUSA)
Dr. Kan Sakamoto, (NFD)
Dr David Schrire, (Vattenfall)
Dr. Koroush Shirvan, (MIT)
Dr. Russell Stachowski, (GNF)
Mr Marco Streit, (Paul Scherrer Institut)
Mr. John Strumpell, (AREVA)
Mr. Jim Tulenko, (UFL/US)
Dr. Paul Turinsky, (NCSU)
Dr. Nicolas Waechkel, (EDF)
Mr. Fu Xiangang, (CGNPC)
Dr. Suresh Yagnik, (EPRI)
Dr. Yang-Hyun Koo, (KAERI)
Mr. Ying Yi, (SNERDI)
Dr. Jinzhao ZHANG, (Tractebel Engineering / GDF SUEZ)
### Meeting Schedule

#### SUNDAY, SEPTEMBER 15, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00 PM–5:00 PM</td>
<td>Registration</td>
<td>Grand Promenade A</td>
</tr>
<tr>
<td>3:00 PM–5:00 PM</td>
<td>Exhibit Table Setup</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>6:00 PM–8:00 PM</td>
<td>Opening Reception <em>(Sponsored by AREVA)</em></td>
<td>Grand Promenade AB</td>
</tr>
</tbody>
</table>

#### MONDAY, SEPTEMBER 16, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM–5:00 PM</td>
<td>Registration</td>
<td>Grand Promenade A</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Speaker's Breakfast (Continental)</td>
<td>Sharon</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Attendee Continental Breakfast <em>(Sponsored by Enusa Industrias Avanzadas)</em></td>
<td>Grand Ballroom D</td>
</tr>
<tr>
<td>8:30 AM–5:30 PM</td>
<td>Display Booths</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>8:30 AM–10:00 AM</td>
<td>Opening Plenary Session—Part I</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>10:00 AM–10:20 AM</td>
<td>AM Coffee Break <em>(Sponsored by Enusa Industrias Avanzadas)</em></td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>10:20 AM–11:40 AM</td>
<td>Opening Plenary Session—Part II</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>12:00 PM–1:00 PM</td>
<td>Lunch <em>(Sponsored by Structural Integrity Associates)</em></td>
<td>Grand Ballroom D</td>
</tr>
<tr>
<td>1:00 PM–3:00 PM</td>
<td>Modeling—I</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Operation and Experience—I</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Transient Fuel Behavior—I</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>3:00 PM–3:30 PM</td>
<td>PM Coffee Break <em>(Sponsored by Duke Energy)</em></td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>3:30 PM–5:30 PM</td>
<td>Modeling—II</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Operation and Experience—II</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Transient Fuel Behavior—II</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>5:30 PM–8:00 PM</td>
<td>Evening Poster Reception <em>(Sponsored by Electric Power Research Institute, Inc. and ORNL)</em></td>
<td>Grand Ballroom D</td>
</tr>
</tbody>
</table>

#### TUESDAY, SEPTEMBER 17, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM–3:00 PM</td>
<td>Registration</td>
<td>Grand Promenade A</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Speaker’s Breakfast (Continental)</td>
<td>Sharon</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Attendee Continental Breakfast <em>(Sponsored by Babcock &amp; Wilcox mPower)</em></td>
<td>Grand Ballroom D</td>
</tr>
<tr>
<td>8:30 AM–6:00 PM</td>
<td>Display Booths</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>8:30 AM–10:10 AM</td>
<td>Modeling—III</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Operation and Experience—III</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Transient Fuel Behavior—III</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>10:10 AM–10:30 AM</td>
<td>AM Coffee Break <em>(Sponsored by Babcock &amp; Wilcox mPower)</em></td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>10:30 AM–12:30 PM</td>
<td>Spent Fuel and Transportation II and Fabrication and Seismic Simulation—I and New Fuel Concepts—I</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>Transient Fuel Behavior—IV</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>12:30 PM–1:30 PM</td>
<td>Lunch <em>(Sponsored by Studsvik Nuclear and Studsvik Scanpower)</em></td>
<td>Grand Ballroom D</td>
</tr>
</tbody>
</table>
### TUESDAY, SEPTEMBER 17, 2013 (Continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM–3:50 PM</td>
<td>Modeling—IV</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>New Fuel Concepts—II</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Transient Fuel Behavior—V</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>3:50 PM–4:20 PM</td>
<td>PM Coffee Break</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td></td>
<td><em>(Still Available)</em></td>
<td></td>
</tr>
<tr>
<td>4:20 PM–6:00 PM</td>
<td>Modeling—V</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>New Fuel Concepts—III</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Design and Materials—I</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>6:30 PM–10:00 PM</td>
<td>NASCAR Hall of Fame Banquet</td>
<td>NASCAR Museum</td>
</tr>
<tr>
<td></td>
<td><em>(Sponsored by Westinghouse Electric Company, Toshiba and Korea Nuclear Fuel Company)</em></td>
<td></td>
</tr>
</tbody>
</table>

### WEDNESDAY, SEPTEMBER 18, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM–3:00 PM</td>
<td>Registration</td>
<td>Grand Promenade A</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Speaker’s Breakfast (Continental)</td>
<td>Sharon</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Attendee Continental Breakfast</td>
<td>Grand Ballroom D</td>
</tr>
<tr>
<td></td>
<td><em>(Sponsored by SCANA)</em></td>
<td></td>
</tr>
<tr>
<td>8:30 AM–12:00 PM</td>
<td>Display Booths</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td>8:30 AM–10:10 AM</td>
<td>Modeling—VI</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>New Fuel Concepts—IV</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Design and Materials—II</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>10:10 AM–10:30 AM</td>
<td>AM Coffee Break</td>
<td>Grand Promenade AB</td>
</tr>
<tr>
<td></td>
<td><em>(Sponsored by SCANA)</em></td>
<td></td>
</tr>
<tr>
<td>10:30 AM–12:30 PM</td>
<td>Modeling—VII</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td></td>
<td>New Fuel Concepts—V</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Design and Materials—III</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td>12:30 PM–1:20 PM</td>
<td>Lunch <em>(Sponsored by Global Nuclear Fuel)</em></td>
<td>Grand Ballroom D</td>
</tr>
<tr>
<td>1:20 PM–3:00 PM</td>
<td>New Fuel Concepts—VI</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td></td>
<td>Design and Materials—IV</td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td></td>
<td>Modeling—VIII</td>
<td>Grand Ballroom A</td>
</tr>
</tbody>
</table>

### THURSDAY, SEPTEMBER 19, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM–1:00 PM</td>
<td>Registration</td>
<td>Grand Promenade A</td>
</tr>
<tr>
<td>7:00 AM–8:30 AM</td>
<td>Workshop Breakfast</td>
<td>College</td>
</tr>
<tr>
<td>8:30 AM–10:10 AM</td>
<td>Fuel Handling Events Workshop</td>
<td>Independence</td>
</tr>
<tr>
<td>10:10 AM–10:30 AM</td>
<td>Workshop AM Coffee Break</td>
<td>College</td>
</tr>
<tr>
<td>10:30 AM–12:00 PM</td>
<td>Fuel Handling Events Workshop</td>
<td>Independence</td>
</tr>
<tr>
<td>8:00 AM–3:00 PM</td>
<td>VC Summer Site/AP1000 Tour</td>
<td>VC Summer Site/AP1000</td>
</tr>
</tbody>
</table>
MEETING INFORMATION
The LWR Fuel Performance Meeting TopFuel 2013 will be held September 15-19, 2013, in Charlotte, NC. There will be a Fuel Handling Events Workshop (coordinated by EPRI) held on the final day.

ACCOMMODATIONS/HOTEL INFORMATION
The Charlotte Westin Hotel will be the location for the LWR Fuel Performance Meeting, where all activities and technical sessions will take place.

The Charlotte Westin Hotel is located at 601 S. College Street, Charlotte, NC 28202.

The special room rate for the meeting is: $189.00/night (single / double rate). To take advantage of this reduced rate, reservations must be made by August 22, 2013.

Reservations can be made online at: https://www.starwoodmeeting.com/Book/nuclearsociety

To register by phone for a guest room: 866-837-4148

MEETING REGISTRATION
Registration is required for all attendees and presenters. Badges are required for admission to all events. The Full Meeting Registration fee includes one (1) ticket to the Opening Reception, Evening Poster Reception, Tuesday NASCAR Banquet, Monday, Tuesday, Wednesday Luncheons, and a copy of the Meeting Proceedings on CD-Rom.

REGISTRATION HOURS
The Meeting Registration Desk and Message Center will be located in Grand Promenade A of the Westin Charlotte Hotel. You may register, purchase tickets for events, or pick up your registration packet during the following hours:

SUNDAY, SEPTEMBER 15, 2013
3:00 P.M. – 5:00 P.M.

MONDAY, SEPTEMBER 16, 2013
7:00 A.M. – 5:00 P.M.

TUESDAY, SEPTEMBER 17, 2013
7:00 A.M. – 3:00 P.M.

WEDNESDAY, SEPTEMBER 18, 2013
7:00 A.M. – 3:00 P.M.

THURSDAY, SEPTEMBER 19, 2013
7:00 A.M. – 1:00 P.M.

NOTE:
Additional tickets can be purchased at the ANS Registration Desk for $75.00 each.

MEETINGS PROCEEDINGS
The meeting proceedings is available on CD-ROM. Copies of the Meeting Proceedings will be available on-site. Each full meeting registrant will receive a copy of the proceedings as part of the full meeting registration fee. Additional copies may be purchased at the meeting registration desk for $195.00.

This special rate is available at the meeting only. To purchase copies following the meeting, you may contact the ANS Accounting Department at 708-579-8210 (telephone); 708-579-8314 (fax); accounting@ans.org (email); or submit your request in writing to: American Nuclear Society, 97781 Eagle Way, Chicago, IL 60678-9770. Copies of the proceedings are available for $220.00 after the meeting. Payment information must accompany all orders.

SPECIAL EVENTS
Opening Reception
SUNDAY, SEPTEMBER 15, 2013
6:00 p.m. – 8:30 p.m.
Location: Grand Promenade AB
The meeting will start with a welcome reception. One ticket to the Welcome Reception is included with the full meeting registration.

Additional tickets can be purchased at the ANS Registration Desk for $50.00 each.

Monday Luncheon
MONDAY, SEPTEMBER 16, 2013
12:00 p.m. – 1:00 p.m.
Location: Grand Ballroom D
One ticket to the Monday Luncheon is included with the full meeting registration.

Additional tickets can be purchased at the ANS Registration Desk for $50.00 each.

Evening Poster Reception
MONDAY, SEPTEMBER 16, 2013
5:30 PM–8:00 PM
Location: Grand Ballroom D
One ticket to the Monday Evening Poster Session is included with the full meeting registration.

Additional tickets can be purchased at the ANS Registration Desk for $50.00 each.

Tuesday Luncheon
TUESDAY, SEPTEMBER 17, 2013
12:30 PM–1:30 PM
Location: Grand Ballroom D
One ticket to the Tuesday Luncheon is included with the full meeting registration.

Additional tickets can be purchased at the ANS Registration Desk for $50.00 each.

Wednesday Luncheon
WEDNESDAY, SEPTEMBER 18, 2013
12:30 PM–1:20 PM
Location: Grand Ballroom D
One ticket to the Wednesday Luncheon is included with the full meeting registration.

Additional tickets can be purchased at the ANS Registration Desk for $50.00 each.
NASCAR Hall of Fame Banquet  
TUESDAY, SEPTEMBER 17, 2013  
6:30 PM–10:00 PM

Located in Uptown Charlotte, N.C., the 150,000-square-foot NASCAR Hall of Fame is an interactive, entertainment attraction honoring the history and heritage of NASCAR. The high-tech venue, designed to educate and entertain race fans and non-fans alike, opened May 11, 2010 and includes artifacts, interactive exhibits, and a 278-person state-of-the-art theater. Also on the property is Buffalo Wild Wings restaurant and the NASCAR Hall of Fame Gear Shop.

The goal of the facility is to honor NASCAR icons and create an enduring tribute to the drivers, crew members, team owners and others that have impacted the sport in the past, present and future.

Enjoy an adventure at the NASCAR Hall of Fame. First test your driving skills at the iRacing simulators with some serious competition. The simulator tracks are laser scanned replicas and the cars have all the setup and feel as their real world counterparts. Then, stroll through the 40,000 square foot exhibit space showcasing the history and heritage of the sport.

Also here is the link to the website:
http://www.nascarhall.com/

The evening includes cocktails, appetizers and dinner.

One ticket to the NASCAR Hall of Fame is included with the full meeting registration. Additional tickets can be purchased at the ANS Registration Desk for $100.00 each.

Technical Tour: AP1000 Construction Site Tour (SCE&G)  
THURSDAY, SEPTEMBER 19, 2013  
8:00 AM-3:00 PM

For the first time in nearly 30 years, new nuclear plants are being constructed in the United States. Construction of the Westinghouse-designed AP1000® nuclear plants is taking place at SCE&G’s V.C. Summer Nuclear Station in Jenkinsville, South Carolina and at Southern Company’s Plant Vogtle in Waynesboro, Georgia.

The AP1000, based on the proven performance of Westinghouse-designed PWRs, is an advanced 1154 MWe nuclear power plant that uses the forces of nature and simplicity of design to enhance plant safety and operations. In addition, the simpler design and smaller physical footprint of the AP1000 reduces construction costs. The AP1000 is the only Generation III+ reactor to receive Design Certification from the U.S. Nuclear Regulatory Commission (NRC).

We’re excited to offer Top Fuel participants the opportunity to see history in the making during a visit to the V.C. Summer station on Thursday, Sept. 19.

As part of this unique opportunity, participants will receive an overview of the SCE&G V.C. Summer station, including a discussion on regulatory challenges. Following an introduction to V.C. Summer, participants will learn about the construction of the AP1000 plants in China before experiencing firsthand the construction taking place at V.C. Summer. The visit will conclude with a tour of the AP1000 simulator.

A box lunch will be served. Register early as seating is limited. To learn more about the AP1000 prior to the site visit, go to: http://ap1000.westinghousenuclear.com

Fuel Handling Events Workshop  
THURSDAY, SEPTEMBER 19, 2013  
8:30 AM-12:00 PM
Location: Independence

Over the past decade, nuclear plants have experienced a higher number of adverse fuel handling events. These events can range from mispositioning a fuel assembly during in-core refueling to damaging an assembly component in the spent fuel pool during inspection. The events have a global reach and their frequency has risen - particularly in the spent fuel pool area. This increase has been linked to several factors, including an increase in off-normal fuel handling activities such as dry cask loading, fuel cleaning, healthy fuel inspections that require disassembly of fuel bundles, as well as assembly reconstitution. Additionally, with a growing population of fuel handling workers reaching retirement, “tribal knowledge” may not be getting communicated to replacement personnel or captured in procedures.

This workshop is designed to communicate this growing problem to a broader audience. Speakers will describe the types of events encountered, their causal factors and actions being taken to address the events. A Q&A panel session will follow and participants will solicit assistance from the technical community to help address gaps in knowledge and solutions.
Welcome Message

Welcome from your Conference General Co-Chairs

Welcome to TopFuel 2013 in the energy hub city of Charlotte, North Carolina (USA)!

The meeting promises to be a “high-octane” event as we focus on Achieving Excellence Beyond Zero by 2010. What better place to talk about fuel excellence than an area rich in the application of nuclear technology, and in auto racing heritage and excellence—home of the NASCAR Hall of Fame.

Charlotte, the largest city in North Carolina, also is the second largest financial center in the U.S. and has more than 850 non-U.S.-owned companies representing 42 countries, as well as a metro population of more than 2.6 million people.

In this beautiful city, TopFuel 2013 showcases the latest in technology and future industry trends for world-class LWR fuel performance. It also provides you an opportunity to exchange best practices with your peers representing more than 20 countries, 185 technical papers in 27 technical sessions.

The plenary session features Duke Energy Nuclear President Dhiaa Jamil; and Westinghouse Chief Executive Officer Danny Roderick. A panel discussion including key industry leaders also will be an important focus in the plenary.

In addition to the many excellent technical presentations and fuel handling events workshop this week you will have an opportunity to network during social events, visit display booths in the exhibit area and take a tour of the V.C. Summer nuclear plant construction site—one of only two sites in the U.S. constructing new plants featuring Westinghouse AP1000® power plant technology.

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

Enjoy!

David C. Culp  
General Co-Chair  
Duke Energy

José Emeterio Gutiérrez  
General Co-Chair  
Westinghouse Electric Company
MONDAY, SEPTEMBER 16, 2013 • 8:30 AM–10:00 AM

OPENING PLENARY SESSION—PART I

Grand Ballroom C

OPENING REMARKS BY CONFERENCE GENERAL CHAIRS:
• David C. Culp (Duke Energy)
• José Emeterio Gutiérrez (Westinghouse Electric Company)

PLENARY SPEAKER:
• Kan Sakamoto, (Senior Researcher, Cladding & Structural Materials Nippon Nuclear Fuel Development Co. Ltd, NFD)

KEYNOTE SPEAKERS:
• Danny Roderick (CEO, Westinghouse)
• Dhiaa Jamil, President (Duke Energy Nuclear)

MONDAY, SEPTEMBER 16, 2013 • 10:30 AM–12:00 PM

OPENING PLENARY SESSION—PART II

Grand Ballroom C

Moderator: Vinny Esposito, invited

PLENARY PANEL SPEAKERS:
• Dr. Jeon Kyeong Lak, (Head of R&D Center, KEPCO NF)
• Dave Garchow, (VP Plant Technical Support, INPO)
• Jean-Luc Provost, (Nuclear Fuel Senior Executive Advisor, EDF, invited)
• DOE Representative, (TBD)
• INL, (TBD)
• US utility representative, (TBD)

MONDAY, SEPTEMBER 16, 2013 • 1:00 PM–3:00 PM

MODELING—I

Grand Ballroom A

OPERATION AND EXPERIENCE—I

Grand Ballroom B

MONDAY, SEPTEMBER 16, 2013 • 3:30 PM–5:30 PM

MODELING—II

Grand Ballroom A

OPERATION AND EXPERIENCE—II

Grand Ballroom B

MONDAY, SEPTEMBER 16, 2013 • 1:00 PM–3:00 PM

TRANSIENT FUEL BEHAVIOR—I

Grand Ballroom C

TRANSIENT FUEL BEHAVIOR—II

Grand Ballroom C
Technical Sessions Tuesday

TUESDAY, SEPTEMBER 17, 2013 • 8:30 AM–10:00 AM
MODELING—III
Grand Ballroom A

TUESDAY, SEPTEMBER 17, 2013 • 1:30 PM–3:50 PM
MODELING—IV
Grand Ballroom A

OPERATION AND EXPERIENCE—III
Grand Ballroom B

NEW FUEL CONCEPTS—II
Grand Ballroom B

TRANSIENT FUEL BEHAVIOR—III
Grand Ballroom C

TRANSIENT FUEL BEHAVIOR—V
Grand Ballroom C

TUESDAY, SEPTEMBER 17, 2013 • 10:30 AM–12:30 PM
SPENT FUEL AND TRANSPORTATION II AND FABRICATION AND SEISMIC SIMULATION—I
Grand Ballroom A

TUESDAY, SEPTEMBER 17, 2013 • 4:20 PM–6:00 PM
MODELING—V
Grand Ballroom A

NEW FUEL CONCEPTS—I
Grand Ballroom B

NEW FUEL CONCEPTS—III
Grand Ballroom B

TRANSIENT FUEL BEHAVIOR—IV
Grand Ballroom C

DESIGN AND MATERIALS—I
Grand Ballroom C
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEDNESDAY, SEPTEMBER 18, 2013 • 8:30 AM–10:10 AM</strong></td>
<td><strong>MODELING—VI</strong></td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td><strong>NEW FUEL CONCEPTS—IV</strong></td>
<td></td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td><strong>DESIGN AND MATERIALS—II</strong></td>
<td></td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td><strong>WEDNESDAY, SEPTEMBER 18, 2013 • 10:30 AM–12:30 PM</strong></td>
<td><strong>MODELING—VII</strong></td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td><strong>NEW FUEL CONCEPTS—V</strong></td>
<td></td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td><strong>DESIGN AND MATERIALS—III</strong></td>
<td></td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td><strong>WEDNESDAY, SEPTEMBER 18, 2013 • 1:20 PM–3:00 PM</strong></td>
<td><strong>NEW FUEL CONCEPTS—VI</strong></td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td><strong>DESIGN AND MATERIALS—IV</strong></td>
<td></td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td><strong>WEDNESDAY, SEPTEMBER 18, 2013 • 10:30 AM–12:30 PM</strong></td>
<td><strong>MODELING—VII</strong></td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td><strong>NEW FUEL CONCEPTS—V</strong></td>
<td></td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td><strong>DESIGN AND MATERIALS—III</strong></td>
<td></td>
<td>Grand Ballroom C</td>
</tr>
<tr>
<td><strong>THURSDAY, SEPTEMBER 19, 2013 • 8:00 AM–3:00 PM</strong></td>
<td><strong>AP1000 TOUR</strong></td>
<td>VC Summer Site</td>
</tr>
<tr>
<td><strong>THURSDAY, SEPTEMBER 19, 2013 • 8:30 AM–12:00 PM</strong></td>
<td><strong>EPRI WORKSHOP</strong></td>
<td>Independence</td>
</tr>
</tbody>
</table>
ADVANCE CONFERENCE REGISTRATION FORM

LWR Fuel Performance Meeting/TopFuel 2013
September 15-19, 2013
Charlotte, NC • Westin Charlotte Hotel

FILL OUT COMPLETELY - PLEASE PRINT

ANS ID #: ________________________________________

First Name/Middle Initial: ____________________________
Last Name: _______________________________________

Name To Appear On Badge: __________________________
Company/Affiliation: _______________________________

Job Title: _________________________________________ □ Company or □ Home

Street Address: ____________________________________
Country: __________________________________________

City/State/Zip: ___________________________ Fax: ______________

Telephone: ___________________________ e-mail: ____________
e-mail (cc) __________________________________________

Special Accommodations Required to Fully Participate.
ANS Will Contact You Regarding Special Accommodations □ please contact me

dietary restrictions (meeting attendee only): a) □ vegetarian b) □ gluten free c) □ vegan d) □ other
dietary restrictions (guest only): a) □ vegetarian b) □ gluten free c) □ vegan d) □ other

Individual Conference Registration — 2013 LWR FUEL PERFORMANCE MEETING/TOPFUEL

Speaker/Session Chair Meeting Registration
Includes one (1) ticket to the Opening Reception, Evening Poster Reception, Tuesday NASCAR Banquet, Monday, Tuesday, Wednesday Luncheons, and a copy of the Meeting Proceedings on CD-Rom.

<table>
<thead>
<tr>
<th>Speaker/Session Chair Meeting Registration</th>
<th>Fees Paid by August 22, 2013</th>
<th>Fees Paid After August 22, 2013</th>
</tr>
</thead>
</table>

Meeting Attendee Registration
Includes one (1) ticket to the Opening Reception, Evening Poster Reception, Tuesday NASCAR Banquet, Monday, Tuesday, Wednesday Luncheons, and a copy of the Meeting Proceedings on CD-Rom.

<table>
<thead>
<tr>
<th>Meeting Attendee Registration</th>
<th>Fees Paid by August 22, 2013</th>
<th>Fees Paid After August 22, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>[04] □ $1,000</td>
<td>[15] □ $500</td>
<td>[16] □ $600</td>
</tr>
</tbody>
</table>

1-day registration
Includes sessions on the day registered, a copy of the Meeting Proceedings on CD-Rom, and (1) ticket for lunch that day.

<table>
<thead>
<tr>
<th>1-day registration</th>
<th>Fees Paid by August 22, 2013</th>
<th>Fees Paid After August 22, 2013</th>
</tr>
</thead>
</table>

Student Registration
Includes one (1) ticket to Evening Poster Reception, Monday, Tuesday, Wednesday Luncheons, and a copy of the Meeting Proceedings on CD-Rom.

<table>
<thead>
<tr>
<th>Student Registration</th>
<th>Fees Paid by August 22, 2013</th>
<th>Fees Paid After August 22, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>[08] □ $125</td>
<td>[18] □ $225</td>
<td></td>
</tr>
</tbody>
</table>
Special Events

SUNDAY, SEPTEMBER 15, 2013
Additional Ticket: Opening Reception [21] ___ x $75.00 $______

MONDAY, SEPTEMBER 16, 2013
Spouse/Guest Welcome Breakfast [29] ___ x $40.00 $______
Additional Ticket: Monday Luncheon [22] ___ x $50.00 $______
Additional Ticket: Evening Poster Reception [23] ___ x $75.00 $______

TUESDAY, SEPTEMBER 17, 2013
Additional Ticket: Tuesday Luncheon [24] ___ x $50.00 $______
Additional Ticket: Banquet at the NASCAR Hall of Fame [25] ___ x $100.00 $______

WEDNESDAY, SEPTEMBER 18, 2013
Additional Ticket: Wednesday Luncheon [26] ___ x $50.00 $______

THURSDAY, SEPTEMBER 19, 2013
Technical Tour: AP1000 Construction Site Tour (SCE&G) (Limited availability) [27] ___ x $60.00 $______
(Completed Technical Tour Form is required to attend.)
Workshop: Utility Fuel Handling Events Workshop (coordinated by EPRI) [28] ___ x $50.00 $______

Grand Total and Form of Payment for Meeting Registration and Additional Tickets

TOTAL OF MEETING REGISTRATION AND ADDITIONAL TICKETS GRAND TOTAL: $_________

METHOD OF PAYMENT (CHECK ONE)
☐ Check ☐ American Express ☐ VISA ☐ MasterCard ☐ Diners Club ☐ Wire Transfer

Credit Card Number: __________________________________________ Expiration Date: __________

Cardholder’s Signature: _______________________________________
Print cardholder’s name if different than registrant

Please Register On-Site After Wednesday, September 10, 2013

Make checks payable to ANS in U.S. funds and mail to ANS Registrar, 97781 Eagle Way, Chicago, IL 60678-9770. Credit card registrations may be faxed to 708/579-8221. Do not mail registrations which have been faxed. Send bank funds transfers to Chase Bank, 10. S Dearborn St., Chicago, IL 60603. Bank Phone: 312-661-5000. Bank Fax: 312-661-6417. ANS Checking Account # 824941, Bank Routing Number (ABA) 021000021 SWIFT CODE (IBAN) CHASUS33, ACH Transfers 0710-0001-3.

PLEASE NOTE: When sending something to ANS with express mail or with an overnight service provider such as FedEx, UPS, DHL, etc., please use the following address only: American Nuclear Society, 555 North Kensington Avenue, LaGrange Park, IL 60526, U.S.A. Do not use the Eagle Way address in Chicago for express and overnight mail as it will be returned to sender and this will result in a processing delay.

Registration cancellations must be made in writing prior to August 22nd in order to receive a refund minus a $150 processing fee. Meeting registrations and additional tickets canceled after August 22, 2013 will not be refunded; however, you may send a substitute. Please contact the ANS Registrar at telephone number: 708/579-8316 or e-mail: registrar@ans.org with any questions.