# LWR Fuel Performance Meeting TopFuel 2013







# **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

NASCAR Banquet: Toshiba, Westinghouse Electric Co. and

Korea Nuclear Fuel Co.

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**

Meeting Officials	4
Technical Program Members	5
Meeting Schedule	6-7
Meeting Information and Special Events	8-9
Welcome Message	10
Monday Technical Sessions	11
Tuesday Technical Sessions	12
Wednesday/Thursday Technical Sessions	13
Advance Conference Registration Form	13-14





# 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

# 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.

# **EXECUTIVE COMMITTEE MEMBERS**



Mr. Jeff Deshon

JT Kwon

Ms. Danielle Urbina (ANS)

Ms. Lisa Alicia (ANS)

Ms. Gale Hauck (Westinghouse)

Mr. Sumit Ray (Westinghouse)

Ms. Kathy Szlis (Westinghouse)

Ms. Judy Pavlecic (Westinghouse)



# **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, (B&W)

Mr. Clive Ingram, (Office of Nuclear Regulation)

Mr. Victor Inozemtsev, (IAEA)

Dr. John Jones, (Office of Nuclear Regulation)

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Mr. Rob Montgomery, (PNNL)

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Mr Javier Riverola, (ENUSA)

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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 Waeckel, (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)



3:00 PM-5:00 PM	Registration	Grand Promenade A
3:00 PM-5:00 PM	Exhibit Table Setup	Grand Promenade AB
6:00 PM-8:00 PM	Opening Reception (Sponsored by AREVA)	Grand Promenade AB

# MONDAY, SEPTEMBER 16, 2013

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

# TUESDAY, SEPTEMBER 17, 2013

7:00 AM-3:00 PM	Registration	Grand Promenade A
7:00 AM-8:30 AM	Speaker's Breakfast (Continental)	Sharon
7:00 AM-8:30 AM	Attendee Continental Breakfast (Sponsored by Babcock & Wilcox mPower)	Grand Ballroom D
8:30 AM-6:00 PM	Display Booths	Grand Promenade AB
8:30 AM-10:10 AM	Modeling— III	Grand Ballroom A
	Operation and Experience—III	Grand Ballroom B
	Transient Fuel Behavior—III	Grand Ballroom C
10:10 AM-10:30 AM	AM Coffee Break (Sponsored by Babcock & Wilcox mPower)	Grand Promenade AB
10:30 AM-12:30 PM	Spent Fuel and Transportation II and Fabrication and Seismic Simulation—I	Grand Ballroom A
	New Fuel Concepts—I	Grand Ballroom B
	Transient Fuel Behavior—IV	Grand Ballroom C
12:30 PM-1:30 PM	Lunch (Sponsored by Studsvik Nuclear and Studsvik Scanpower)	Grand Ballroom D

# TUESDAY, SEPTEMBER 17, 2013 (Continued)

1:30 PM-3:50 PM	Modeling—IV	Grand Ballroom A
	New Fuel Concepts—II	Grand Ballroom B
	Transient Fuel Behavior—V	Grand Ballroom C
3:50 PM-4:20 PM	PM Coffee Break (Still Available)	Grand Promenade AB
4:20 PM-6:00 PM	Modeling—V	Grand Ballroom A
	New Fuel Concepts— III	Grand Ballroom B
	Design and Materials—I	Grand Ballroom C
6:30 PM-10:00 PM	NASCAR Hall of Fame Banquet (Sponsored by Westinghouse Electric Company, Toshiba and Korea Nuclear Fuel Company)	NASCAR Museum

# WEDNESDAY, SEPTEMBER 18, 2013

7:00 AM-3:00 PM	Registration	Grand Promenade A
7:00 AM-8:30 AM	Speaker's Breakfast (Continental)	Sharon
7:00 AM-8:30 AM	Attendee Continental Breakfast (Sponsored by SCANA)	Grand Ballroom D
8:30 AM-12:00 PM	Display Booths	Grand Promenade AB
8:30 AM-10:10 AM	Modeling—VI	Grand Ballroom A
	New Fuel Concepts—IV	Grand Ballroom B
	Design and Materials—II	Grand Ballroom C
10:10 AM-10:30 AM	AM Coffee Break (Sponsored by SCANA)	Grand Promenade AB
10:30 AM-12:30 PM	Modeling—VII	Grand Ballroom A
	New Fuel Concepts—V	Grand Ballroom B
	Design and Materials—III	Grand Ballroom C
12:30 PM-1:20 PM	Lunch (Sponsored by Global Nuclear Fuel)	Grand Ballroom D
1:20 PM-3:00 PM	New Fuel Concepts—VI	Grand Ballroom B
	Design and Materials—IV	Grand Ballroom C
	Modeling—VIII	Grand Ballroom A

# THURSDAY, SEPTEMBER 19, 2013

7:00 AM-1:00 PM	Registration	Grand Promenade A
7:00 AM-8:30 AM	Workshop Breakfast	College
8:30 AM-10:10 AM	Fuel Handling Events Workshop	Independence
10:10 AM-10:30 AM	Workshop AM Coffee Break	College
10:30 AM-12:00 PM	Fuel Handling Events Workshop	Independence
8:00 AM-3:00 PM	VC Summer Site/AP1000 Tour	VC Summer Site/AP1000

### **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 the Sunday Welcome Reception, Monday, Tuesday, Wednesday Luncheons, Evening Poster Event and NASCAR Banquet.

# **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 \$75.00 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 \$75.00 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 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

### TRANSIENT FUEL BEHAVIOR—I

Grand Ballroom C

# MONDAY, SEPTEMBER 16, 2013 • 3:30 PM-5:30 PM

**MODELING—II** 

Grand Ballroom A

# OPERATION AND EXPERIENCE—II

Grand Ballroom B

# TRANSIENT FUEL BEHAVIOR—II

Grand Ballroom C

# **Technical Sessions Tuesday**

TUESDAY, SEPTEMBER 17, 2013 • 1:30 PM-3:50 PM TUESDAY, SEPTEMBER 17, 2013 • 8:30 AM-10:00 AM **MODELING—III MODELING—IV** Grand Ballroom A Grand Ballroom A **OPERATION AND EXPERIENCE—III NEW FUEL CONCEPTS—II** Grand Ballroom B Grand Ballroom B TRANSIENT FUEL BEHAVIOR—III TRANSIENT FUEL BEHAVIOR—V Grand Ballroom C Grand Ballroom C TUESDAY, SEPTEMBER 17, 2013 • 10:30 AM-12:30 PM TUESDAY, SEPTEMBER 17, 2013 • 4:20 PM-6:00 PM SPENT FUEL AND TRANSPORTATION II AND FABRICATION AND SEISMIC SIMULATION—I MODELING-V Grand Ballroom A Grand Ballroom A **NEW FUEL CONCEPTS—III** NEW FUEL CONCEPTS—I Grand Ballroom B Grand Ballroom B **DESIGN AND MATERIALS—I** TRANSIENT FUEL BEHAVIOR—IV Grand Ballroom C Grand Ballroom C

# Technical Sessions Wednesday/Thursday

WEDNESDAY, SEPTEMBER 18, 2013 • 8:30 AM-10:10 AM MODELING—VI	WEDNESDAY, SEPTEMBER 18, 2013 • 1:20 PM-3:00 PM NEW FUEL CONCEPTS—VI
Grand Ballroom A	Grand Ballroom B
	Grand Salar com S
NEW FUEL CONCEPTS—IV	DESIGN AND MATERIALS—IV
Grand Ballroom B	Grand Ballroom C
DESIGN AND MATERIALS. II	MODELING VIII
DESIGN AND MATERIALS—II	MODELING—VIII
Grand Ballroom C	Grand Ballroom A
WEDNESDAY, SEPTEMBER 18, 2013 • 10:30 AM–12:30 PM	THURSDAY, SEPTEMBER 19, 2013 • 8:00 AM-3:00 PM
MODELING—VII	AP1000 TOUR
Grand Ballroom A	VC Summer Site
NEW FUEL CONCEPTS—V	
Grand Ballroom B	THURSDAY, SEPTEMBER 19, 2013 • 8:30 AM-12:00 PM
Grana Dauroom D	EPRI WORKSHOP
	Independence
DESIGN AND MATERIALS—III	
Grand Ballroom C	



# **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:		_ 1	<b>□</b> Company	or	☐ Home				
Street Address:		_	Country:						
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Telephone:		_							
e-mail:		_	e-mail (cc)_						
Special Accommodations Required to Fully Pa	rticipa	ate.							
ANS Will Contact You Regarding Special Acco	mmod	lations	<b>□</b> please	con	ntact me				
dietary restrictions (meeting attendee only): a) $\Box$	vegetar	rian	b) □ glute	n fr	ee c) í	⊐ vega	n	d) □ oth	ner
dietary restrictions (guest only):	vegetar	rian	b) □ glute	n fr	ee c) (	⊐vega	n	d) □ oth	ner
Individual Conference Registration —									
	ANS N	S Paid b ATIONA MBER	y August 22, L NON		EMBER	ANS		ONAL	ugust 22, 2013 NON-MEMBER
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.	[01] [	□ \$850	0 [02]		\$1,000	[11]		950	[12] 🗖 \$1,100
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.	[03] [	□ \$850	0 [04]		\$1,000	[13]		950	[14] 🗖 \$1,100
<b>1-day registration</b> Includes sessions on the day registered, a copy of the Meeting Proceedings on CD-Rom, and (1) ticket for lunch that day.	[05] [	□ \$400	) [06]	] 🗆	\$500	[15]	□\$	5500	[16] 🗖 \$600
Circle one: Mon Tues Wed									
Student Registration Includes one (1) ticket to Evening Poster Reception, Monday, Tuesday, Wednesday Luncheons, and a copy of the Meeting Proceedings on CD-Rom.	[07]	<b>□</b> \$75	[08]	] 🗆	J \$125	[17]	□\$	5175	[18] 🗖 \$225

<b>Special Events</b>					
SUNDAY, SEPTEMBER 15, 2013					
Additional Ticket: Opening Recept	tion			[21] x \$75.00 \$	
MONDAY, SEPTEMBER 16, 2013	3				
Spouse/Guest Welcome Breakfast				[29] x \$40.00 \$	
Additional Ticket: Monday Lunche	eon			[22] x \$50.00 \$	
Additional Ticket: Evening Poster	Reception			[23] x \$75.00 \$	
TUESDAY, SEPTEMBER 17, 2013	3				
Additional Ticket: Tuesday Lunche	on			[24] x \$50.00 \$	
Additional Ticket: Banquet at the	NASCAR Hall	of Fame		[25] x \$100.00 \$	
WEDNESDAY, SEPTEMBER 18, 2	2013				
Additional Ticket: Wednesday Lun	cheon			[26] x \$50.00 \$	
THURSDAY, SEPTEMBER 19, 20	13				
Technical Tour: AP1000 Constructi (Completed Technical Tour Form is	ailability)	[27] x \$60.00 \$			
Workshop: Utility Fuel Handling E	vents Worksh	op (coordinated by	EPRI)	[28] x \$50.00 \$	
Grand Total and Form	of Payme	nt for Meetir	ng Registrat	ion and Additional T	ickets
TOTAL OF MEETING REGISTRATION METHOD OF PAYMENT (CHECK OF		IONAL TICKETS		GRAND TOTAL: \$	
☐ Check ☐ American Express	□ VISA	☐ MasterCard	☐ Diners Club	☐ Wire Transfer	
Credit Card Number:				Expiration Date:	
Cardholder's Signature:		rdholder's name if diffe	erent 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 SWIFTCODE(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.



# The Westin Charlotte

601 South College Street • Charlotte, North Carolina

Phone (704) 375-2600 • Fax (704) 375-2623

