



# ANS

# 11<sup>th</sup> Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies

February 9–14, 2019 | Orlando, FL | Renaissance Orlando at SeaWorld



## CALL FOR PAPERS

### EXECUTIVE CHAIRS

#### *Honorary Chair*

Bradley Adams (VP of Engineering, Southern Nuclear Operating Company)

#### *General Co-Chairs*

Daniel Churchman (Fleet Engineering Director, Southern Nuclear Operating Company)

Jason Remer (Director of Life Extension and New Technology, Nuclear Energy Institute)

#### *Technical Co-Chairs (I&C)*

Pradeep Ramuhalli (Senior Research Scientist, Pacific Northwest National Laboratory)

#### *Technical Co-Chairs (I&C) CONTINUED*

Michael Doster (Prof. of Nuclear Engineering, North Carolina State University)

James Turso (Asst. Dir. and Assoc. Res. Prof., Penn State University Radiation Science and Engineering Center)

#### *Technical Co-Chairs (HFE)*

Ron Boring (Human Factors Principal Scientist, Idaho National Laboratory)

Carol Smidts (Prof. of Nuclear Engineering, Ohio State University)

### ABSTRACT DEADLINE: TUESDAY, JULY 31, 2018

<b>JULY</b>	→	ABSTRACTS DUE: <b>Tuesday, July 31</b> (less than 1000 words)
<b>AUGUST</b>	→	REVIEW NOTIFICATION: <b>Tuesday, August 14, 2018</b>
<b>SEPTEMBER</b>	→	FULL PAPERS DUE: <b>Friday, September 14, 2018</b>
<b>OCTOBER</b>	→	REVIEW NOTIFICATION: <b>Wednesday, October 31, 2018</b>
<b>DECEMBER</b>	→	FINAL PAPERS DUE: <b>Monday, December 17, 2018</b>

### ABOUT THE MEETING

This topical meeting is the eleventh in a series organized by ANS Human Factors, and Instrumentation and Controls Division (HFICD). Authors are invited to participate in the International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies (NPIC & HMIT).

Sponsored by American Nuclear Society (ANS), NPIC & HMIT builds upon the successes of previous meetings. The meeting welcomes the submission of full-length technical papers, which will be peer reviewed and published as conference proceedings. Submitted papers must be presented. Detailed information and announcements regarding the conference will be posted on [ans.org/meetings/npichmit/](http://ans.org/meetings/npichmit/).

### ABSTRACT GUIDELINES

Maximum of one page identifying title, authors, affiliations, and three paragraphs (total less than 1000 words) describing the key concepts of the paper. A wide range of topic areas are highlighted on the second page of this call. Authors are encouraged to submit papers on these proposed topics as well as others. Authors of accepted abstracts will be notified by **August 14, 2018**.

### FULL PAPER SUBMISSION

Full papers must describe work that is new, significant, and relevant to the nuclear industry and the subject of the conference. Authors of accepted papers must agree to register and attend the conference and present their papers in person. Papers that are not presented in person at the conference will not appear in the final conference publication. Authors of accepted full papers will be notified by **October 31, 2018**.

**SUBMIT AN ABSTRACT**  
[ans.org/meetings/npichmit/](http://ans.org/meetings/npichmit/)

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### SUGGESTED TOPICS

#### INSTRUMENTATION AND CONTROLS (I&C)

Data Analytics  
Autonomous Control  
Latest Trends in Digital I&C  
Management of I&C Aging and Obsolescence  
Electromagnetic Compatibility (EMC) and EMI/RFI Issues  
Nuclear Energy R&D in I&C Area  
Next Generation I&C Systems  
Safety Critical Software Development, Qualification, and V&V  
I&C and OLM Considerations for Life Beyond 60 Years  
Wireless Technologies for Nuclear Facilities  
Education and Training of I&C Professionals  
Diversity and Defense in Depth (D3)  
Modeling Digital I&C Systems in PRA/PSA  
Advanced Surveillance, Diagnostics, and Prognostics  
Field Programmable Gate Array (FPGA)  
I&C Modernization Experience  
SMR Instrumentation and Control  
I&C for Advanced Reactors  
On-line Monitoring for Maintenance Optimization  
Hazard and Failure Mode Analysis for Digital Systems  
I&C Regulations, Standards, and Guidelines  
Digital System Reliability  
Light Water Reactor Sustainability (LWRS)  
On-Line Monitoring of Rod Control Systems  
Cyber Security in Digital I&C  
Managing and Preserving I&C Knowledge and Competence  
Advanced Sensors and Measurement Technologies  
Cable Aging and Cable Condition Monitoring  
Research Reactor I&C  
In-Pile Instrumentation  
I&C Lessons Learned from Fukushima  
Productivity/Efficiency Improvement  
Digital Control System Applications  
General Sessions in I&C

#### HUMAN FACTORS (HF)

Current Concepts in Advanced Control Rooms  
Experience with Control Room Modernization  
Lessons Learned from the Design and Operation of Generation III and III+ Reactors  
Nuclear Energy R&D in HMI Areas  
Applications of Technology to Enhance O&M  
Design and Development of Group-View, Wall-Panel Displays  
Visualization Techniques to Improve Human Decision Making  
Computerized Procedure Systems  
Use of Virtual Reality to Support Design and O&M  
Use of Simulation for Design, Engineering, Maintenance and Verification Activities  
Emerging Concepts of Operations for Advanced Reactors  
Innovative Human Interface Technologies  
HFE Use of PRA/PSA Insights and Results for Design and Operations  
Computerized Operator Decision and Support Systems  
Innovative Solutions to Alarm Overload  
HFE Verification and Validation: Approaches and Methods  
Designing Control Rooms for Small Modular Reactors  
HFE Education and Training  
Lessons Learned from Soft Controls in Plant Operations  
Human Factor Lessons from Fukushima  
HFE Contributions to Productivity and Efficiency  
Human Factors Aspects of SMRs  
HFE Standards and Guidelines Update  
Workstation and Control Room Layout Design for Computer-Based Control Rooms  
Use of Work-Domain and Cognitive Task Analysis for Human-System Interface Design  
Human Reliability Issues in Digital Systems and Computer-Based Control Rooms  
Operation of Hybrid Control Room  
General Sessions in Human Factors  
Advances in HFE Design and Analysis Tools  
Advances in Human-Automation and Human Performance Assessment

Note: The topics listed above are not session titles; they are provided just as a guide for paper topics. The technical program committee will be happy to expand the areas and include new sessions into the program. Please contact the Technical Program Chairs for suggestions.