Post-Fukushima: Nuclear Power Education and Outreach

Revised Technical & Scientific Education for Nuclear Power Plant Projects in the U.S.

Michael Corradini, President
American Nuclear Society

LAS ANS SYMPOSIUM July 4th 2012

Education and Outreach

- There was a distinct lack of accurate information during the early days of the Fukushima event
- The event reminded us that public understanding of the facts related to nuclear power and nuclear science and technology in general limited
- We recognized that certain groups took the opportunity to disseminate misinformation
- We got questions from our colleagues and students

Our Challenge

- Imagine a world where people have "perfect information" about the risks and benefits of any energy technology…
  - For Nuclear => How do we use nuclear technology differently? (electricity, transport, process heat, irradiation, medical isotopes)
  - What is our impact? Would we be safer, more secure, more prosperous?
  - Does Nuclear have any interest for young people as engineers?
- The Nuclear "Conundrum"
  - Despite resilient public support in the wake of Fukushima, there remains an unease about all things nuclear.
  - Nuclear/radiation pushes many of our "rational fear buttons"
    - can't be detected by senses or can cause 'eventual' death
    - is "man made" and controlled by large entities.
  - Nuclear technology costs more and is utilized less than it might, while often externalities of "conventional" technologies are 'overlooked'

Who is the Nuclear Energy Audience?

- Students are the most immediate audience
- Technical and non-technical co-workers
- The 'public' beyond these colleagues:
  - General Public
  - Younger students (Kindergarten thru High School: K-12)
  - National leaders (politicians, industry leaders, academe)
  - Media

What is the effect on students/colleagues?

- Our engineering students are the future of nuclear power and power systems engineering for decades
- Since Fukushima we have seen no change in the interest in nuclear or more general energy engr.
- Most importantly, our students and many of our colleagues have assisted us in trying to explain what has happened.
- Greater interest in Risk Analysis (more programs)

Fukushima Public Communications

- Response team put together within six weeks in response to inaccurate or incomplete information that had dominated media reports
- Special Committee on Fukushima created to explain what occurred as well as to evaluate communications challenges surrounding the events following the earthquake and tsunami
- Released Special Committee report in March 2012

ANS Special Committee On Fukushima

The special committee is to provide a clear and concise explanation of the events surrounding the accident to the general public.

We evaluated needed actions to better communicate with the public.

http://fukushima.ans.org

Co-Chairs: D. Klein, Univ. of Texas, M. Corradini, Univ. of Wisconsin

Paul T. Dickman, Argonne National Laboratory

Jacopo Buongiorno, Massachusetts Institute of Technology

Hisashi Ninokata, Tokyo Institute of Technology

Mike Ryan, M.T. Ryan and Associates LLC

Craig D. Sawyer, Retired Senior Engineer

Amir Shahkarami, Exelon Nuclear

Akira Tokuhiro, University of Idaho

Fukushima Special Committee Report

Nuclear Power Technology

Accident Analysis

Health Physics

Accident Cleanup

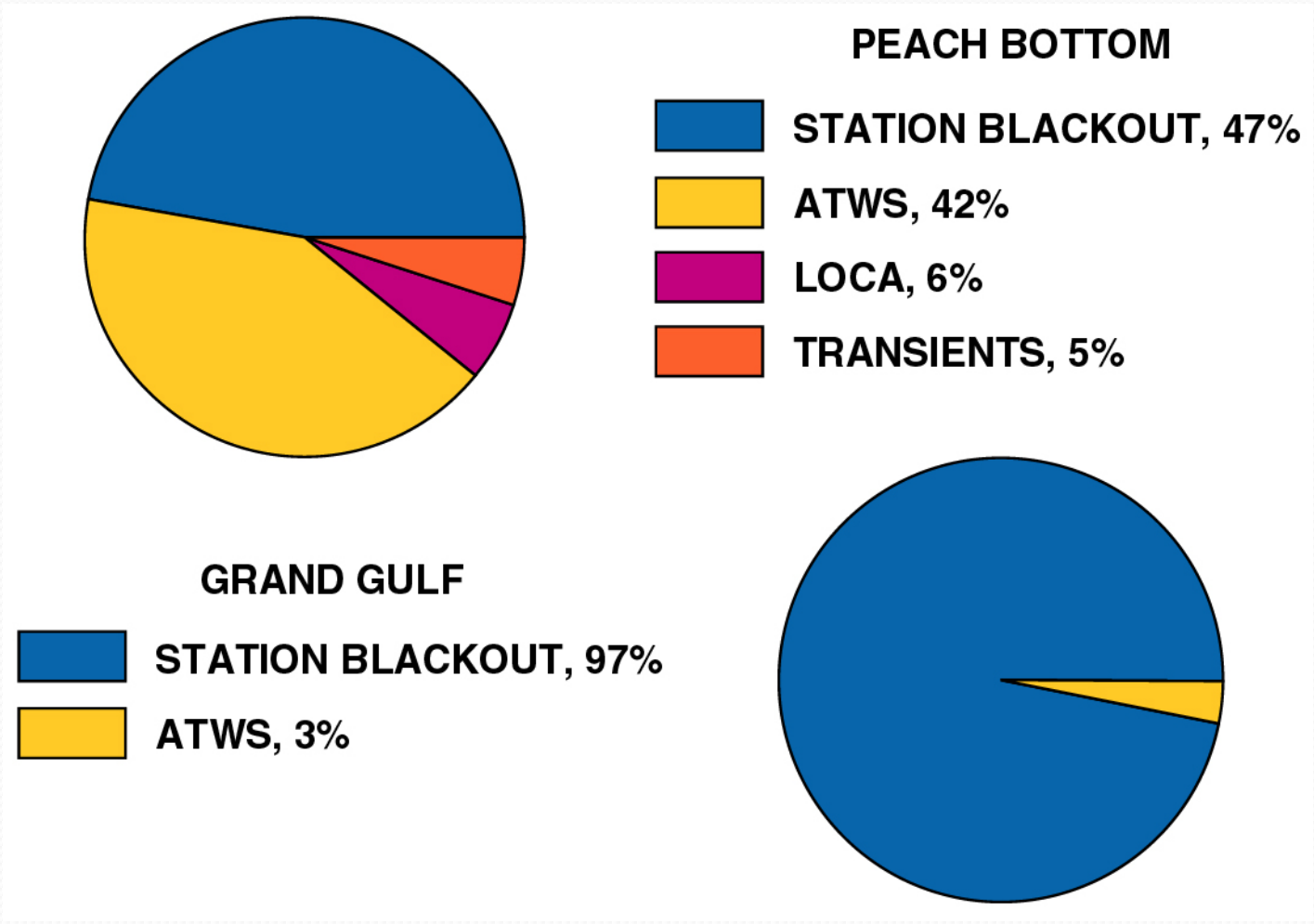
Safety Issues

Risk Communication

Safety-Related Issues

- Safety approach should evolve to risk-informed regulation
- Command/control of an accident should reside with plant manager on-site to assure safety is ‘main focus’ during any event
- Confirm that plants have consistent and appropriate design base for natural disasters (reassess on a periodic basis with new info)
- Deal with a station blackout with a coping plan for longer periods (flexible approach: automatic systems, on-site actions, off-site aid)
  - Protection of DC batteries and switchgear from natural disasters
  - Ability to reroute water sources with robust pump systems
  - Logistically position fuel, generators and pumps to move onto plant site

Boiling Water Reactor Contributors to Core Damage Frequency – NUREG-1150



Safety-Related Issues (cont.)

- Modifications after 9/11 could be used as reliable safety systems
- Consider specific hardware changes that have safety benefit (e.g., reliable and uniform system/protocol for containment venting)
- Spent fuel cooling was maintained but uncertainty suggests that better instrumentation and assured cooling water refill needed
- Review Emergency Operating Procedures that stabilize plant condition and allow progression to low pressure and temps
- Emergency Planning decisions in Japan were puzzling
- Int'l groups need to help develop regulatory structure in emerging countries be made to conform to international standards

Lessons Learned in Public Outreach

- ANS is developing a comprehensive communication plan
- How do we move forward? => Improve "nuclear literacy."
- ANS focus on key groups: school-age children; our policymakers; the general public and the media.
- Public relations will not do this => rather sustained education

- Why should the ANS be a leader in this education effort?
  - Credibility: the general public trusts open-honest discussion of scientists and engineers, but is quite savvy and quick to disregard "industry messaging."
  - Human Element: ANS members can engage in "broad" outreach.

ANS Outreach

- Public Information Committee
  - Volunteers from the membership who can act as content experts and who prioritize efforts
- Public Policy Committee
  - Volunteers from the membership who develop position statements that represent the vision, mission, and values of ANS and that can be used to foster dialogue with legislators and other audiences
- Media Outreach
  - Provide resource and background material
  - Provide access to experts

Media Relations

- Distribute press releases on relevant Society and industry events
- Respond to media inquiries related to the nuclear field
- Grow our proactive media outreach capabilities

Use of Social Media

- To provide digital platforms for ANS members and other nuclear advocates to share information and to promote science-informed perspectives on nuclear science and technology issues

ANS Social Media Presence

- ANS Nuclear Cafe
  - 700 subscribers
  - 25,000 page views in May 2012
- LinkedIn Group
  - 2,800 members
- Facebook page
  - 4,200 fans
- Twitter account
  - 3,100 followers
- ANS Nuclear Cafe TV
  - 3,000 video views

ANS Center for Nuclear Science and Technology Information

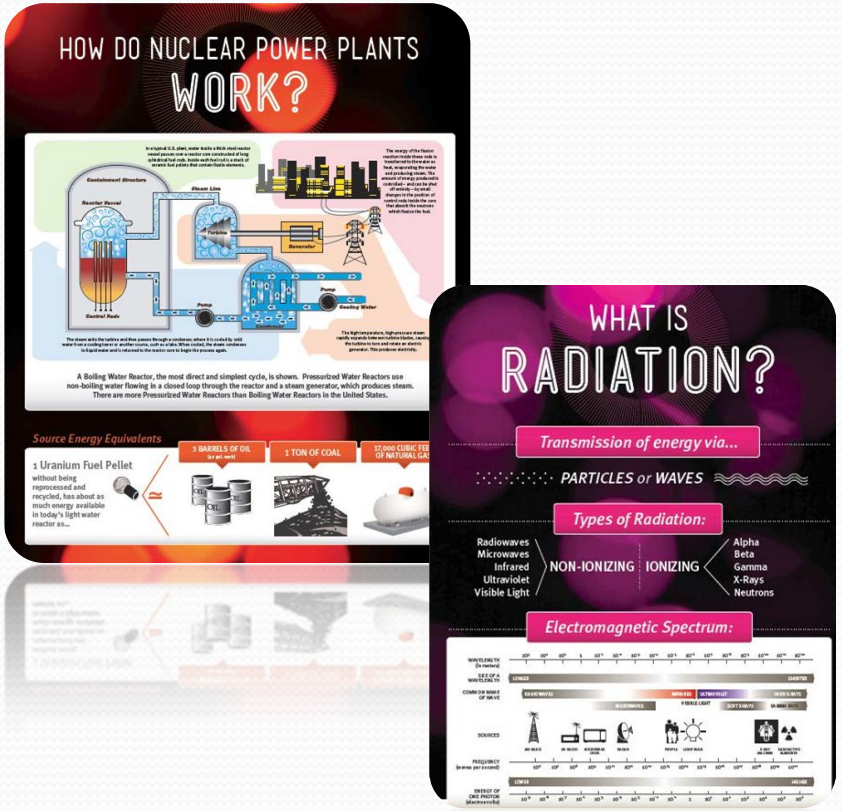
- A vehicle to help foster fact-based information to a broader audience (external to ANS)
- To elevate societal knowledge and understanding of nuclear science and technology

Target Audiences of the Center

r Science
and Technology Information

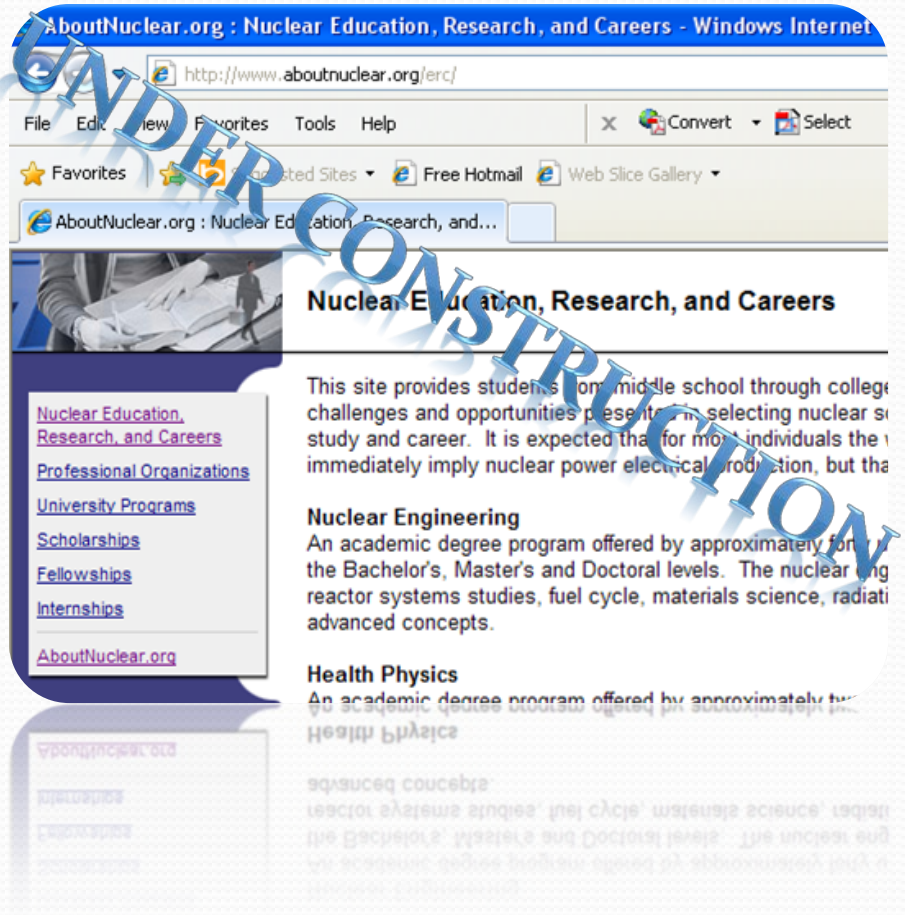
Key Accomplishments – K-12

- Education materials
  - Gathering information to determine ideal education tools for students: Kindergarten through High School
  - Early stage of key message development for general public materials



Key Accomplishments – General public

- Website for public education is in development and is to be launched late in 2012



Key Accomplishments – General public

- Pilot project for grassroots communications
- Supported localized efforts of community outreach through:
  - Media training
  - Debate preparation
  - Social media promotion
  - Media coverage
- Now have a model for replicating across the country

Key Accomplishments – Policy Makers

- Funded congressional seminar series – Nuclear Technology Fundamentals Program
- Surveyed congressional staff
- Conducted four of five briefings for staff
  1. Radiation/Radioactivity
  2. How Reactors Work, and Fukushima: One Yr Later
  3. Nuclear Fuel Cycle
  4. Nonproliferation issues
  5. 5th topic to be determined, seeking July date

Key Accomplishments - Policy Makers

Staff who attend all five briefings receive a certificate of completion from ANS

Results of the program series:

- Nearly 100 attendees at four sessions
- Expecting six “graduates” with roughly 20 others who need one or two more sessions
- Increasing awareness of the series on the Hill
- Many positive reviews from attendees
- Higher ANS visibility as unbiased source

Short-term Goals for the Center

- Complete design of and launch the Center website
- Development of K-12 program including educational tools for students, teacher training, and other material as requested
- Complete the congressional seminar series and develop next series
- Provide grassroots communication materials to ANS members in their local sections for projects

Long-term Goals for the Center

- Develop a funding base for continued operations
- Develop effective communications materials and programs to meet the mission of the Center
- Elevate societal knowledge and understanding of nuclear science and technology

Supporters to date

Thank you !

Any questions ?

Dr. Mike Corradini
ANS President

555 N Kensington Ave
La Grange Park, IL 60526
O 708.352.6611
F 708.579.8229
www.ans.org