




RIC 2014
Safety Critical Software – International Perspectives

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Presentations

- Introduction – Steven Arndt
- A Regulatory Task Force on Safety Critical Software for Nuclear Reactors – Pierre Jacques Courtois
- The Regulatory Task Force on Safety Critical Software for Nuclear Reactors – Mark Howell
- Software Qualification Activities for Nuclear Safety Critical Software – Gee Yong Park
- Question and Answer Period




NRC International Coordination

- NRC actively participates in international programs in the area of digital instrumentation and control to gain insights and better leverage operational experience
- Multi-lateral programs
 - Multinational Design Evaluation Program (MDEP)
 - International Task Force on Safety Critical Software
- Bilateral programs
- Support for development of international standards
 - IAEA
 - IEC
 - IEEE



Digital System Challenges

- Increased complexity
 - Consolidation of discrete analog functions into single digital system
 - Potential consolidation of independent safety system echelons of defense into a single digital system with a common platform
 - Potential new failure modes
- Limited operational history in nuclear applications
- Limited capability to model digital system behavior
- Continuing rapid evolution of new methods, tools and technology



Safety Critical Software Challenges

- Unlike hardware, software is challenging to assess and the assessment often requires review of artifacts rather than the code itself
- Software testing and analysis can support but not completely demonstrate correctness of the software
- Software analysis is not yet a mature science
- Guidance on review of software tools is limited
- Different industries and countries have different processes for the regulatory evaluation of safety critical software
