U.S. EPR™ Digital I&C

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U.S. EPR Digital I&C Progress

- **Nov 2006: First U.S. EPR I&C topical report submitted**
- **Dec 2007: Submittal of U.S. EPR design certification application**
  - 256 Chapter 7 RAIs have been formally received and 195 responses have been submitted
- **Frequent interactions with NRC staff beginning in April 2006**
  - **28 meetings**
  - **11 audits**
  - **Monthly management phone calls initiated in April 2009**
  - **Weekly phone calls initiated in January 2010**
- **June 2010: NRC staff identifies remaining areas of concern regarding communications independence**
- **July 2010 to November 2010: AREVA proposes design modifications to reduce "complexity" and to address other NRC concerns regarding communications independence**
- **November 2010: Final version of integrated I&C closure plan submitted**

While progress has been made in 4+ years of discussion and review of the U.S. EPR I&C design, a few technical issues remain to be fully resolved.

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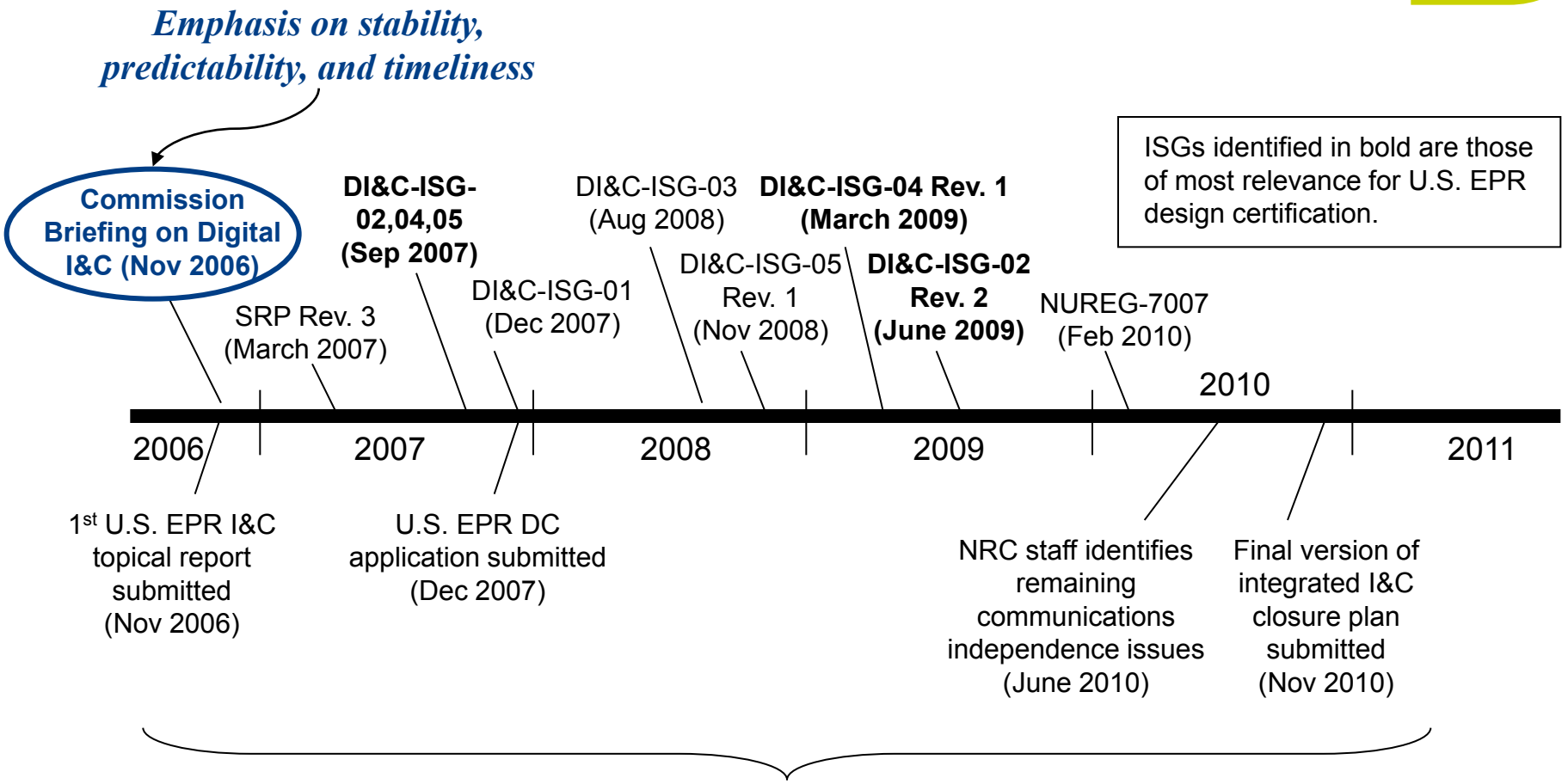
Timeline



Frequent interactions between NRC staff and AREVA have allowed the review to progress in a changing environment.

What's Left?

- **Execute closure plan to resolve communications independence issues, including identification of details of design changes, implementation in supporting documents, and preparation and submittal of revised licensing documentation**
  - Resolution of criteria for connection of a Service Unit (a non-safety device) to the TXS safety systems (Protection System and Safety Automation System)
  - Resolution of amount of design information and level of detail required to support design certification Safety Evaluation Report, especially regarding communications
- **Resolution of NRC staff questions regarding Diversity and Defense-in-Depth (D3)**
- **Review by Advisory Committee on Reactor Safeguards (ACRS)**

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Key Challenges to Reaching Closure

- **Stabilization of guidance and its interpretation**
  - Examples:
    - DI&C-ISG-02 on Diversity and Defense-in-Depth (D3)
    - DI&C-ISG-04 on Communications Issues in Highly Integrated Control Rooms
    - NUREG/CR-7007 “Diversity Strategies for Nuclear Power Plant Instrumentation and Control Systems”
- **Getting beyond “too complex” to defining specific requirements and expectations**
- **Recognizing and balancing tradeoffs between “simplicity” and the benefits of enhanced safety and reliability offered by digital I&C**
- **Gauging the influence of other regulatory bodies on I&C design**

>> ***Progress has been made, but continued attention and diligence is needed to achieve closure for new plant digital I&C reviews, to ensure predictability and timeliness in future reviews, and to leverage digital I&C more effectively to achieve the potential it offers to improve plant safety and reliability.***

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