

# NRC Commission

## Meeting

**Ed Cummins**

**Westinghouse Electric Company**

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NUCLEAR  
ENERGY  
INSTITUTE

# Design Lessons Learned

- **Utility Requirements Document (URD)**
  - **Accumulated lessons learned from 30 years of operating experiences**
  - **Detailed, strict conformance reviews were an integral part of the plant design process**
- **European Utility Requirements (EUR)**
  - **Similar to the URD but based on operating experience in Europe**
- **INPO – Operating experience to apply to advanced light water designs**
- **COL applicants are very active participants in the details of the designs that they have selected**
- **NRC generic issues**

# Design Maturity

- **Standardization permits design completion for plants after the first unit**
- **10CFR52 licensing process demands more design completion than the 10CFR50 two-step requirements for PSAR**
- **Lessons learned validate the importance of design maturity**
- **Design maturity is a recognized goal by all stakeholders in new nuclear projects**

# Construction Lessons Learned

- **Lessons learned from overseas construction and from corrective action plans**
- **Key areas for continued attention include:**
  - **Design completion**
  - **Early regulatory approval**
  - **Supervision of suppliers**
  - **Attention to details, and**
  - **Effective corrective action programs**

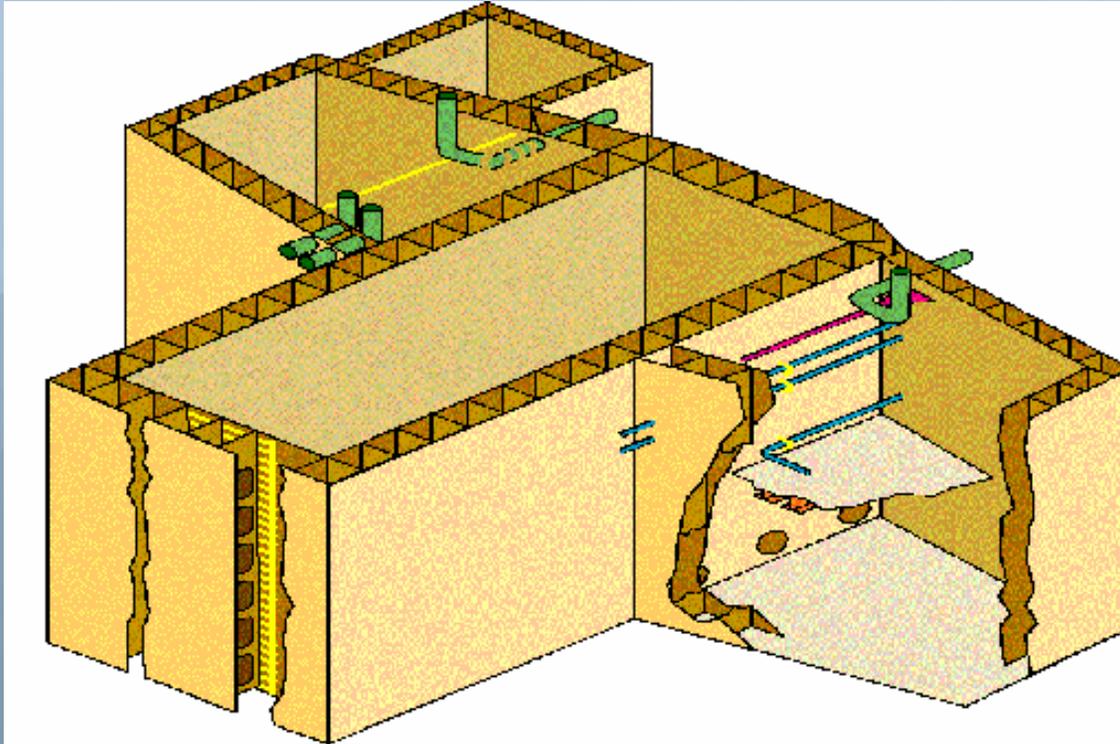
# Benefits of Modularization

- **Quality is improved by the use of a controlled environment and a stable, permanent work force**
- **Demand for critical skills at the site are reduced**
- **Preliminary testing such as flushing and hydrostatic testing can be accomplished in the shop**
- **Simplifies construction management challenges**
- **Successfully implemented by all of the nuclear plant suppliers in Japan**
- **Successfully applied in other industries**

# Impact of Modularization on Project Delivery

- **Modularization demands early design details**
  - Engineered components must be delivered to the modular fabricator much earlier
  - Develop detailed module design
- **Evaluation of module suppliers**
  - Involvement in design for manufacturability
  - Capability
  - Nuclear experience
- **Regulatory impacts of module supply**
  - Manufacture may start **18-24 months before COL is issued**
  - Large modules assembled on the site
  - Inspection plan should recognize location and schedule for module manufacture

# Modular Approach Improves Construction Quality



Large Structural Modules Enable 3-Year Construction Schedule

<u>Module Type</u>	<u>Number</u>
Structural	122
Piping	154
Mechanical Equipment	55
Electrical Equipment	11
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<b>TOTAL</b>	<b>342</b>

# Startup Feedwater Pump Module

