

# **Guidance for COL Applicants on Design Implementation of Digital Instrumentation and Control Systems in Nuclear Power Plants**



**NEI 04-01 Public Meeting  
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## **Implementation of DAC/ITAAC**

- To confirm that the as-built computer-based plant instrumentation and control systems (I&C systems) conforms to the certified design, the design acceptance criteria (DAC) is verified as part of the I&C system ITAAC.
- The COL applicant is to develop the procedures and test programs necessary to demonstrate that the requirements for the ITAAC for DAC are met during the digital system design implementation.
- The ITAAC will be performed by the COL applicant and reviewed by the NRC throughout the system lifecycle including implementation, installation and operation.  
The applicant and NRC will establish agreed upon review points in the system design development process. See Figures 1 and 2 for system and software lifecycle stages.  
Through the system design activities, system requirements are allocated to components and give rise to hardware and software requirements. Software development activities proceed in parallel with hardware development and become integrated with hardware activities during the system validation stage. Software is validated against software requirements, integrated with hardware, and the complete system is validated against system requirements.

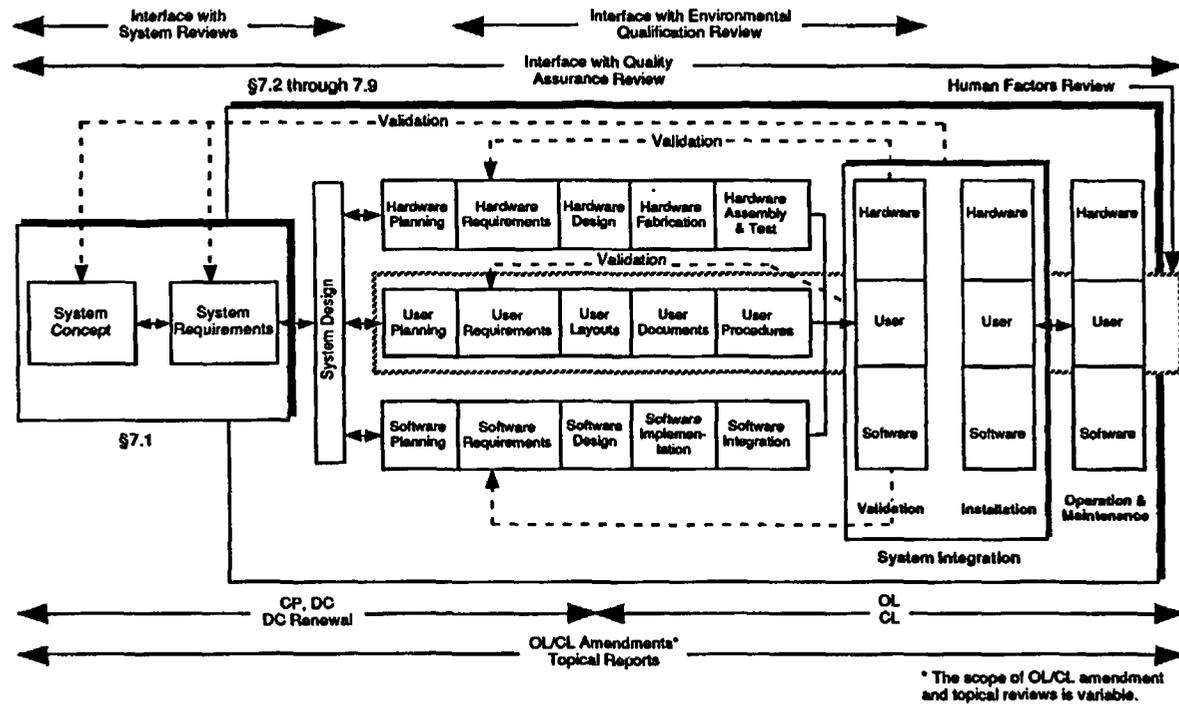


Figure 7.0-2. Relationship Between Development Life Cycle Stages, Review Types, and SRP Sections

## Figure 2: Software Life Cycle

Life Cycle Activity Groups	Planning Activities	Requirements Activities	Design Activities	Implementation Activities	Integration Activities	Validation Activities	Installation Activities	Operations & Maintenance Activities
Software Management Plan		Requirements Specifications	Design Specifications	Code Listings	System Build Documentation		Operations Manuals	
Software Development Plan			Hardware & Software Architecture			Installation Configuration Tables		
Software QA Plan								
Integration Plan								
Installation plan								
Maintenance plan						Maintenance Manuals		
Training plan						Training Manuals		
Operations Plan								
Software Safety Plan	Requirements Safety Analysis	Design Safety Analysis	Code Safety Analysis	Integration Safety Analysis	Validation Safety Analysis	Installation Safety Analysis	Change Safety Analysis	
Software V&V Plan	V&V Requirements Analysis Report	V&V Design Analysis Report	V&V Implementation Analysis & Test Report	V&V Integration Analysis & Test Report	V&V Validation & Test Report	V&V Validation & Test Report	V&V Change Report	
Software CM Plan	CM Requirements Analysis Report	CM Design Report	CM Implementation Report	CM Integration Report	CM Validation Report	CM Installation Report	CM Change Report	

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*Note: A separate document is not required for each topic identified, however, project documentation should encompass all the topics.*

