

Essential Tool for Meeting Guidance of ACAD 98-004, Revision 4

DLB Fundamentals & The Art of Design Review



Classroom Instructor

Michael Shlyamberg, P.E.

Mr. Shlyamberg has over forty years of engineering and management experience in the design, analysis, startup, maintenance, operation, and inspection of nuclear (BWR, PWR, CANDU, RBMK) and fossil power plants, industrial facilities, and DOE installations. Since 1993 he has been providing independent consulting services to the NRC, Utilities, and the DOE.

Mr. Shlyamberg developed this training to address recurring, industry-wide incidents, that demonstrated a lack of understanding and knowledge of regulatory framework, plant specific licensing basis and their impact on design basis and plant documents by engineers and the first line supervisors. This training is based on Mr. Shlyamberg's hands-on engineering experience and his participation in over one hundred NRC engineering inspection, utilities self-assessments (IDI, SSEI, EDSFI, SWSOPI, E&TS, SSDPCI, CDBI, PI&R, etc.); and over twenty engineering assessments of all major DOE nuclear installations.

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Intended Audience

Design & Systems Engineering personnel with 1 to 8 years of experience, their first-line supervisors and Shift Technical Advisors.

Duration

Two (2) days. May be split into 2 separate training courses: Day 1 for a general audience and a full 2 day course for a narrower audience.

Type

Classroom

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Terminal Learning Objectives

This course applies to all engineering disciplines. The goals are:

1. Foster critical thinking.
2. Enhance ability to apply scientific principles towards formulation and solution of engineering problems.
3. Achieve improvements in quality of engineering products by minimize errors in day-to-day activities by:
 - a. Comprehension of the interrelation between Licensing Basis, Design Basis, and Plant Documents.
 - b. Building on the knowledge acquired through DLB Fundamentals, attain comprehension of design review process techniques.

Enabling Learning Objectives

Part 1, “Design and Licensing Bases (DLB) Fundamentals”

1. Identify general flow down of requirements
2. Identify requirements key to engineering activities in 10 CFR:
 - 50.59
 - 50.46, 50.72, 50.73, 50.9
 - 10 CFR 50, Appendix A
 - 10 CFR 50, Appendix B
3. Define and differentiate between 10 CFR 50, Regulatory Guides, and Generic NRC Communications
4. Define and differentiate between 10 CFR 50 Appendix B Requirements (3 examples for each Criterion). The breakout work group sessions for each example utilize INPO training techniques of dynamic learning activities.
 - Criterion III, Design Control
 - Criterion V, Instructions, Procedures, & Drawings
 - Criterion XI, Test Control
 - Criterion XVI, Corrective Action
5. Recognize the potential consequences of non-compliance.

Part 2, “The Art of Design Review”

1. Comprehend purpose of design review process
2. State Top Down elements of design review process:
 - Licensing Basis
 - Design Basis
3. State Bottom Up elements of Design Review process:
 - Plant Procedures
 - Corrective Actions
4. State the causes and barriers to engineering errors
5. Practice application of design review process in two (2) case study examples. The breakout work group sessions for each case study utilize INPO training techniques of dynamic learning activities.
6. Recognize the potential consequences of non-compliance
7. Dynamic Learning Activity: What criterion should be applied?

Key Industry Documents

- 10CFR50, 10CFR52, 10CFR54
- 10CFR50, Appendix A & B
- Regulatory Guides, Generic Letters, Bulletins, Information Notices, Regulatory Issue Summaries
- ANSI N45.2.11-1974; NQA-1 1994 Edition
- INPO, ACAD 98-004, Revision 4, November 2017, Guidelines for Training and Qualification of Engineering Personnel

Other Related Information

This course has been successfully implemented at the following US Utilities:

- Southern – utility wide licensee
- TVA, Watts Bar – 1 class
- Entergy, Grand Gulf – 4 classes
- Exelon, James A. Fitz Patrick NPP – 1 class
- Exelon University – 1 class
- Detroit Edison, Fermi 2 – 4 classes

This course addresses all topics of Orientation Training, Guidelines (Item 3.B) of INPO, ACAD 98-004, Revision 4:

- Introduction to Documents, Records and Forms
- Licensing Basis
- Design Bases and Configuration Management