



# Post-Fire Safe-Shutdown Circuit Analysis

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# Background



- In 1997, licensees submitted a number of licensee event reports (LERs) that document problems related fire-induced electrical circuit failures
- In response, the NRC issued Information Notice (IN) 99-17, "Problems Associated With Post-Fire Safe-Shutdown Circuit Analysis"
- On November 29, 2000, NRC temporarily suspended inspection of associated circuits (ML003773142).
- To support closure of the circuits issue Nuclear Energy Institute (NEI) developed NEI 00-01, "Guidance for Post-Fire Safe-shutdown Analysis" (ML031640322)



# Background Continued NRR



- Brookhaven National Laboratory (BNL) developed a post-fire safe-shutdown analysis guidance letter report "Introduction to Post-Fire Safe-Shutdown Analyses" (ML023430533).
  - Currently NUREG-1778 "Knowledge Base for Post-Fire Safe-Shutdown Analysis" (Draft Report For Comment) (ML040210151)
- The Electric Power Research Institute (EPRI) issued "Spurious Actuation of Electrical Circuits Due to Cable Fires: Results of an Expert Elicitation" (Report No. 1006961, May 2002).
- Staff conducted a facilitated public workshop on February 19, 2003, in Rockville, MD (ML030620006 - Transcript)
- Staff published a Regulatory Issue Summary (RIS) 2004-003



# Appendix R III.G Final Rule



- “The objective for the protection of safe shutdown capability is to ensure that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant.”
  - Federal Register, Vol. 45, No. 225,  
11/19/1980



# Definitions



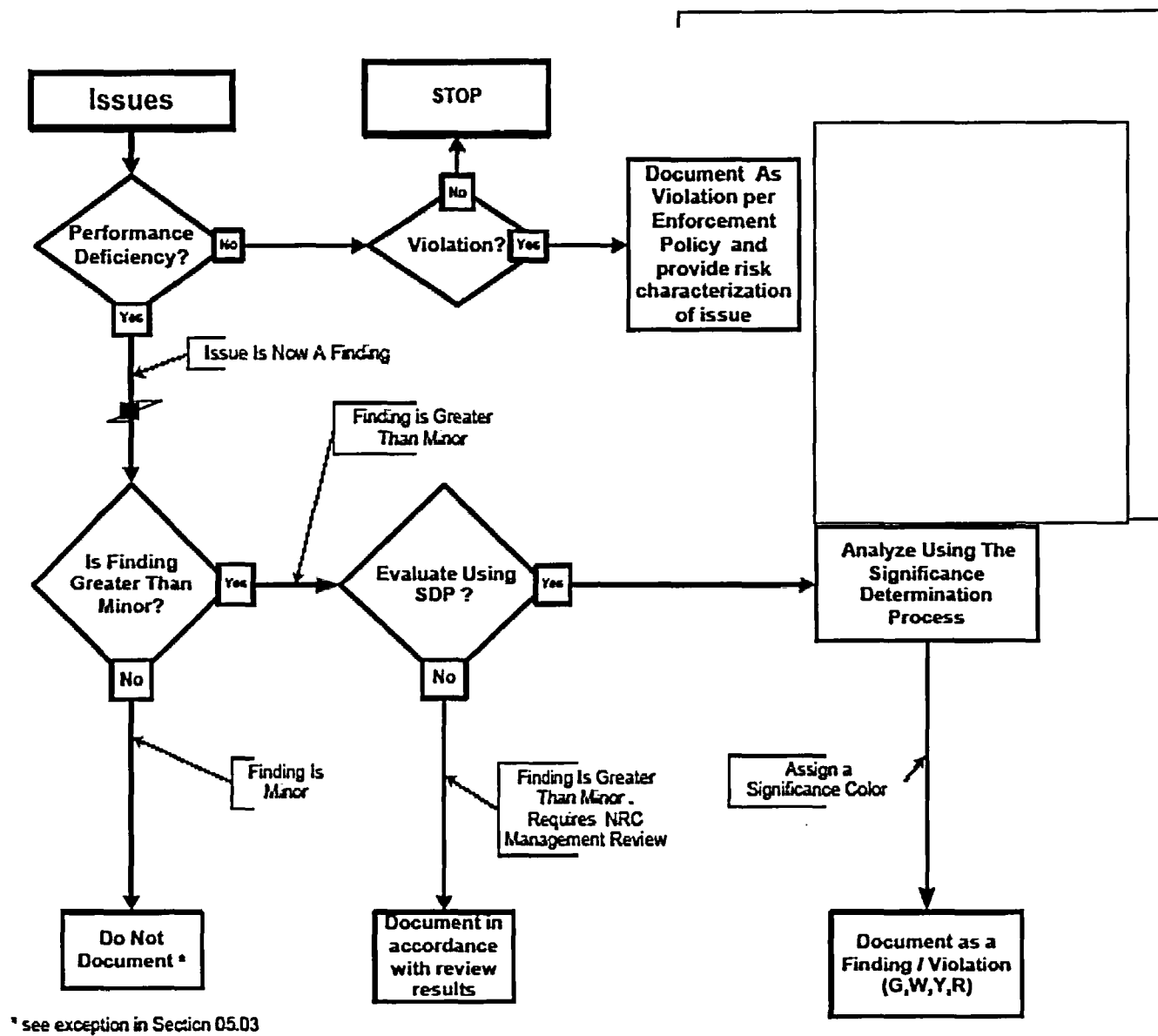
- Finding
  - An issue of concern that is related to a licensee performance deficiency. Findings may or may not be related to regulatory requirements and, therefore, may or may not be related to a violation. NRC Inspection Manual Chapter 0612
- Violation
  - The failure to comply with a legally binding regulatory requirement, such as a statute, regulation, order, license condition, or technical specification. NRC Enforcement Manual



# From IMC-0612, Appendix B

(Traditional  
Enforcement Portion  
Removed)

ML031610690





# Risk and Compliance



	Risk Significant (White, Yellow, Red)	Very Low Risk Significance (Green)	Minor
Violation	Document as Violation in Inspection Report	Document as Violation in Inspection Report	Not Documented (except as described in 05.03)
Finding	Document as Finding in Inspection Report	Document as Finding in Inspection Report	Not Documented



# Compliance



- Pre-1979 Plants Licensing Basis
  - 10CFR50 Appendix R, III.G
  - Approved Fire Protection Program, SERs, Exemptions
- Post-1979
  - Approved Fire Protection Program
  - Licensing Actions





# Considerations



- Free of Fire Damage
  - The structure, system, or component under consideration is capable of performing its intended function during and after the postulated fire, as needed, without repair. R.G. 1.189
- Associated Circuits
  - Common Power Supply
  - Common Enclosure
  - Spurious Actuation
- Manual Actions
  - Agency Policy on Manual Actions



# Manual Actions



- Manual Actions to respond to misoperations are not listed as an acceptable method for satisfying [10 CFR 50, Appendix R, III.G.2]
- For an interim period, while rulemaking is in progress, the staff determined that acceptance criteria can be developed which would facilitate evaluation of certain manual actions.
  - IP 71111.05, Enclosure 2



# Future Issues



- Staff is preparing a generic communication to outline closure path
- Public Post-Fire Safe-Shutdown Circuits Workshop - October 2004
- Circuit failure enforcement policy
- Publish final inspection guidance
- Manual action rulemaking
- Revised 10 CFR 50.48 – NFPA 805