

NFPA 805 NRC Pilot Observation Meeting Proposed Risk Impact Review Process

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**Charlotte, NC
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Risk Impact Review Goals

- Ensure deficiency is not red per NRC NFPA 805 enforcement discretion policy
- Obtain data to aid in prioritization of corrective actions
 - Modifications are being implemented for under the CLB that we know will also be needed and/or desirable under NFPA 805

Note: NRC NRR still reviewing PE enforcement discretion requests that were in our letter of intent

Risk Impact Review - Enforcement Discretion Policy New Deficiencies

- Enforcement discretion does not apply to the risk-significant issues, which under the Reactor Oversight Process would be evaluated as Red;
- Enforcement discretion does not apply to issues that would be categorized as Severity Level I;
- The licensee is required to adopt compensatory measures until compliance is either restored to 10 CFR 50.48(b) or achieved per 10 CFR 50.48(c)

Risk Impact Review - Enforcement Discretion Policy Existing Deficiencies

- The licensee has entered the noncompliance into its corrective action program and implemented appropriate compensatory measures,
- The noncompliance is not associated with a finding that the Reactor Oversight Process Significance Determination Process would evaluate as Red, or it would not be categorized at Severity Level I,
- The licensee submits a letter of intent by December 31, 2005, stating its intent to transition to 10 CFR 50.48(c).

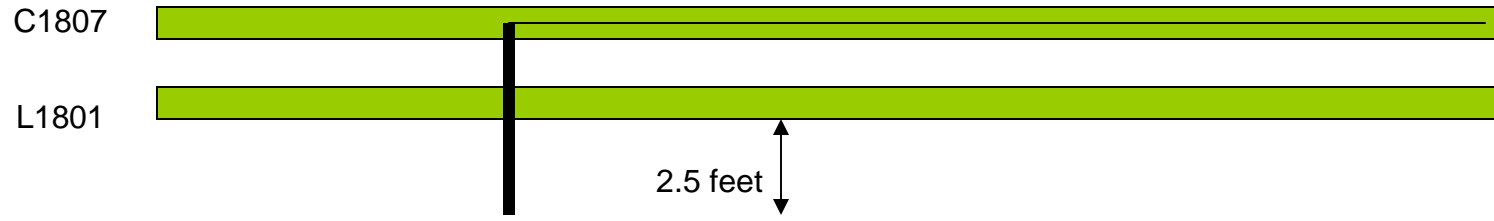
Risk Impact Review

PE High Level Philosophy

- Deficiencies are reviewed together when they are realistically susceptible to the same fire scenario
 - Include all deficiencies identified as non routine
 - Routine items such as maintenance activities are excluded (e.g. door open for a day or degraded pen seals)
- All evaluated scenarios within the same Fire Area are added together to assess aggregate fire risk
- Process uses Fire SDP and/or NUREG 6850 as appropriate

Risk Impact Review

MCC Scenario Example



			1SI-86										
			1SI-3										

MCC

Risk Impact Review – MCC Example

70 kW Fire – Fire Scenario

- Fire in Cubicle 4

- ▶ Time to Damage < 1 Minute
- ▶ PNS = 1.0

- Fire Spread to Trays

- ▶ Plume temperature at L1801 – 674 F
- ▶ Time to ignite L1801 – 10 Minutes (SDP Attachment 7)
- ▶ Fire Spread to C1807 – 14 Minutes (SDP Attachment 3)
- ▶ PNS = 0.12 (SDP Attachment 8)

Risk Impact Review – MCC Example

70 kW Fire – Risk Contribution

- Two MOV's with CPT's Installed
- Possible Hot Short Failure Modes
 - ▶ Spurious Close (no impact)
 - ▶ Spurious Open (impact)
- Probability of Spurious Operation = $(0.3/2) = 0.15$
- Requires both Valves = $(0.15)(0.15) = 0.0225$
- Loss of Seal Cooling Requires Loss of CCW
- CCW Not in Fire Area
- Probability of Failure of Independent Train = 0.01
- Probability of RCP Seal LOCA = 0.2
- CCDP given failures occur = $(0.2)(0.01)$
- CCDP given failures occur and spurious operation = $4.5E-05$

Risk Impact Review – MCC Example

70 kW Fire – CDF Contribution

- Fire in MCC Cubicle

- ▶ FIF (1 cubicle): $(5.5E-05)(0.9) = 4.95E-05$
- ▶ PNS = 1.0
- ▶ CCDP = $4.5E-05$
- ▶ CDF = $(4.95E-05)(1.0)(4.5E-05) = 2.23E-09$

- Fire Spread to Trays

- ▶ FIF (13 cubicles): $(13)(5.5E-05)(0.9) = 6.44E-04$
- ▶ PNS = 0.12
- ▶ CCDP = $4.5E-05$
- ▶ CDF = $(6.44E-04)(0.12)(4.5E-05) = 3.47E-09$

Risk Impact Review – MCC Example

200 kW Fire – Fire Scenario

- Fire in Cubicle 4
 - ▶ Time to Damage < 1 Minute
 - ▶ PNS = 1.0
- Same as 70 kW
- Fire Spread to Trays
 - ▶ Plume temperature at L1801 – >1900 F
 - ▶ Time to ignite L1801 – 1 Minute (SDP Attachment 7)
 - ▶ Fire Spread to C1807 – 5 Minutes (SDP Attachment 9)
 - ▶ PNS = 0.56 (SDP Attachment 8)

Risk Impact Review – MCC Example

200 kW Fire – Risk Contribution

- Same as 70 kW Fire

Risk Impact Review – MCC Example

200 kW Fire – CDF Contribution

- Fire in MCC Cubicle

- ▶ FIF (1 cubicle): $(5.5E-05)(0.1) = 5.5E-06$
- ▶ PNS = 1.0
- ▶ CCDP = $4.5E-05$
- ▶ CDF = $(5.5E-06)(1.0)(4.5E-05) = 2.48E-10$

- Fire Spread to Trays

- ▶ FIF (13 cubicles): $(13)(5.5E-05)(0.1) = 7.15E-05$
- ▶ PNS = 0.56
- ▶ CCDP = $4.5E-05$
- ▶ CDF = $(7.15E-05)(0.56)(4.5E-05) = 1.8E-09$

Risk Impact Review – MCC Example

High Energy Arcing Fault

- Similar to 200 kW fire
 - ▶ Based on the fact that SDP assumes that upstream breaker trips for the HEAF, only inter-cable shorts are considered.
 - ▶ CCDF = $4.5E-07$
 - ▶ CDF = $2.97E-011$

Risk Impact Review – MCC Example

CDF for MCC-1B31-SB

- $2.23\text{E-}09 + 3.47\text{E-}09 + 2.48\text{E-}10 + 1.8\text{E-}09 + 2.97\text{E-}011 = \mathbf{7.78\text{E-}09}$
- Same Circuits Pass over MCC-1B34-SB (3 cubicles)
- CDF Impact for 1B34 fire spreading to trays: $1.85\text{E-}09$
- Total CDF for Fire Area 1-BAL-C = $\mathbf{9.63\text{E-}09}$

Risk Impact Review

- Review HNP Draft Calculation
- **Hand outs are proprietary due to plant specific information – need to be returned at end of session**