



AP-913 ER classifies critical noncritical, and creates a run-to-failure category. Run-to-failure suggests failed equipment has no “failed” consequences. Left without corrective maintenance, design basis defense-in-depth drops. However, PRA suggests risk-based PM treatments and intervals. Timely maintenance minimizes incipient failures that could compromise system functions. ER controls individual equipment failures without regarding system functional design, failure-identifying instrumentation, alarms or operator monitoring. Equipment-level focus avoids complex failure interactions analysis.

Additional considerations

Strategic regulatory policy supports risk-informed, performance-based processes. PRA-internal events system failures originate from failed equipment. Single failure vulnerabilities have direct consequences; identified they must be avoided. Most system failure risk, however, occurs indirectly. ER obscures single failure risk sources. Failure modes and effects analysis identifies probable failures. PRA doesn’t convert risk directly into actionable guidance. In principle, plant equipment “treatments” trace to the design basis. Knowing a pump “fails to pump” doesn’t answer, “Why?” Without cause-effect relationship, the value of classification falls. PM treatments become the same. Ideally, PM treatment strategy comes from and reflects the design basis.

Fear of PRA hinders 10CFR50B use for procurements and maintenance. Partition analysis could provide startup designs more complete SSC SR hierarchical “dedication” classifications. Where adopted, full-scope PRA substantially reduces treatments, providing more complete hierarchical classifications. With no PRA equipment tags and their subcomponent parts in-scope requirements increase, expanding PM treatments. Total work commitment increases. Plants may find completing work difficult without streamlining elsewhere. Treated democratically, not based on risk from risk-informed processes, equipment maintenance scope grows.

Conclusions

Without single point vulnerability, common cause/improbable simultaneous independent failures must occur. Common cause failures result most often in the very programs intended to control failure – maintenance and operations. Endorsed by 50.69, NEI 00-04 determines equipment criticality from safety functions. Complete 50.69 PRA reduces regulatory burden. Ironically, simpler critical requirements use increases burden. *Critical* increases work, with no measurable operating risk improvement. Using *critical equipment*, redundant, backup or standby equipment gets more treatments.

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