

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150-AH29

Risk-Informed Changes to Loss-of-Coolant Accident Technical Requirements

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Availability of draft rule conceptual basis, draft rule language and notice of public meeting.

SUMMARY: The Nuclear Regulatory Commission (NRC) is making available the draft rule conceptual basis and the draft rule language for a new § 50.46a, and conforming changes to §§ 50.34, 50.46, 50.46a (to be redesignated as § 50.46b), 50.109, and 10 CFR Part 50, Appendix A, General Design Criterion 35, concerning emergency core cooling systems (ECCS) for light-water nuclear power reactors. The amended regulations would permit power reactor licensees to implement a voluntary risk-informed alternative to the current requirements for analysis of loss-of-coolant accidents and for ECCS in 10 CFR 50.46. The availability of the draft rule conceptual basis and draft rule language is intended to inform stakeholders of the current status of the NRC's activities to risk-inform 10 CFR 50.46, but the NRC is not soliciting formal public comments on the information at this time. The NRC has scheduled a public meeting for August 17, 2004, at which stakeholders are invited to inform the NRC of possible nuclear power plant modifications that might be sought under such a rule and their associated

costs and benefits. The NRC plans to use this information in preparing the regulatory analysis for the rule.

DATES: A public meeting is scheduled on August 17, 2004 at 9:00 am in the Auditorium of the NRC's offices located at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland.

Should it become necessary to change the date or time of this meeting, the NRC will provide the revised information in a meeting notice posted on the NRC's public website at <http://www.nrc.gov/public-involve/public-meetings/meeting-schedule.html#NRR>.

ADDRESSES: The public meeting will be held in the Auditorium of the NRC's offices located at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The draft rule conceptual basis and draft rule language can be viewed and downloaded electronically via the NRC's rulemaking Web site at <http://ruleforum.llnl.gov>. Along with other publicly available documents related to this rulemaking, the draft information may be viewed electronically on public computers in the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852, Room O-1 F21, and open to the public on Federal workdays from 7:45 a.m. until 4:15 p.m. The PDR reproduction contractor will make copies of documents for a fee.

Publicly available NRC documents created or received in connection with this rulemaking are also available electronically via the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, the public can gain entry into the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The draft rule conceptual basis and draft rule language are available under ADAMS accession number ML042080299. If you do not have access to ADAMS, or if there are problems in accessing the documents located in ADAMS,

contact the NRC PDR Reference staff at (800) 397-4209, (301) 415-4737 or by e-mail at PDR@nrc.gov.

FOR FURTHER INFORMATION CONTACT: Richard Dudley, Policy and Rulemaking Program, Division of Regulatory Improvement Programs, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; Telephone: (301) 415-1116; Internet: rfd@nrc.gov.

SUPPLEMENTARY INFORMATION:

In a staff requirements memorandum dated July 1, 2004, the Commission directed the staff to propose a risk-informed alternative rule to the current requirements in 10 CFR 50.46. The NRC is making preliminary versions of the draft rule conceptual basis and draft rule language available to inform stakeholders of the current status of the NRC's activities to risk-inform 10 CFR 50.46. This draft rule conceptual basis may be subject to significant revisions during the rulemaking process. To meet the Commission's schedule, the NRC is not soliciting early public comments on this draft rule conceptual basis and draft rule language. No stakeholder requests for a comment period will be granted at this stage in the rulemaking process. Stakeholders will have an opportunity to comment on the rule conceptual basis and rule language when it is published as a proposed rule.

Under this risk-informed alternative, the NRC would establish requirements, in a new § 50.46a, which would divide the existing spectrum of LOCA pipe break sizes up to the double-ended rupture of the largest reactor coolant system pipe into two regions. Each region will be subject to different ECCS analysis requirements, commensurate with likelihood of the break. Loss-of-coolant accidents in the smaller break size region (up to and including a "transition break size") will be analyzed by the methods, assumptions and criteria currently used for LOCA

analysis; accidents in the larger break size region (from the transition break size up to the double-ended rupture of the largest reactor coolant system pipe) may be analyzed by less stringent methods based on their lower likelihood. Although loss-of-coolant accidents for breaks larger than the transition break size will become beyond design-basis accidents, the NRC will promulgate regulations ensuring that licensees maintain the ability to mitigate pipe breaks up to the double-ended rupture of the largest reactor coolant system pipe. Since LOCAs in the larger break size region would be required to be mitigated, such accidents would remain separate from severe accidents, which are addressed by voluntary industry guidelines.

Licensees who perform new LOCA analyses using the new risk-informed alternative requirements may find that their plant designs are no longer limited by certain parameters associated with previous analyses. Changing these limitations could enable licensees to propose a wide scope of design or operational changes up to the point of being limited by some other parameter on any of the required analyses. Potential changes might include increasing power, modifying core peaking factors, removing some accumulators from service, eliminating fast starting of one or more emergency diesel generators, etc. Some of these design and operational changes could increase plant safety. In order to ensure that any design and operational changes do not unacceptably reduce plant safety margins or unacceptably increase risk, the rule will require that any potential increase in risk associated with plant modifications is small and consistent with the Commission's Safety Goal Policy Statement (60 FR 42622, August 15, 1995). The risk-informed 10 CFR 50.46 option will also establish a design change evaluation process. The evaluation process will generally involve the criteria for risk-informed license amendments similar to those in Regulatory Guide 1.174 (ADAMS Accession No. ML023240437). The rule would require monitoring of plant risk to ensure that the bases for any facility changes made under this rule are maintained. The rule would require that proposed facility changes be reviewed and approved by the NRC via the routine license amendment

process¹, including any needed changes to the facility's technical specifications. Potential impacts of the plant changes on facility security will be evaluated during the process for license amendment reviews.

The NRC intends to periodically evaluate LOCA frequency information. If estimated LOCA frequencies significantly change, the NRC may revise the transition break size. In such a case, the backfit rule (10 CFR 50.109) would not apply. Similarly, if future evaluations of LOCA frequency invalidate the bases for a design change made by a licensee, that licensee would be required to change the facility and/or procedures or make other compensatory changes elsewhere to reduce facility risk to acceptable levels. In such cases, the backfit rule (10 CFR 50.109) also would not apply.

The NRC's current concept regarding the rule framework, the associated technical bases, and early draft rule language will be posted on the NRC's rulemaking Web site at <http://ruleforum.llnl.gov>. This draft rule conceptual basis and draft rule language are preliminary and may be incomplete in one or more respects. This early draft information is being released to inform stakeholders of the current status of the 10 CFR 50.46 rulemaking. Periodically, the NRC may post updates to the draft rule conceptual basis or draft rule language on the rulemaking Web site.

At the public meeting on August 17, 2004, the NRC would like to obtain information about the potential costs and benefits of the above rule changes in order to complete the regulatory analysis for the proposed rule. After licensees and other stakeholders review the draft rule conceptual basis and draft rule language posted on the NRC website (<http://ruleforum.llnl.gov>), the NRC would like to obtain information as described below.

¹ Requirements for this process are specified in 10 CFR 50.90. They include public notice of all amendment requests in the *Federal Register*, an opportunity for affected persons to request a public hearing, preparation of an environmental analysis, and a detailed NRC technical evaluation to ensure that the facility will continue to provide adequate protection of public health and safety after the amendment is implemented.

1. Estimate the number and type of plants that might pursue this voluntary option.
Estimate the costs of performing the ECCS reanalyses at these plants.
2. Provide the estimated number and types of plant design changes that would be permitted by the ECCS reanalyses at these plants (on a per unit basis) and the estimated costs of any decision analyses associated with such design changes.
3. Estimate the costs of additional analyses (apart from the ECCS reanalyses) required by the proposed rule to determine the acceptability of the above design changes. These costs could include but may not be limited to (1) updating probabilistic risk assessments (PRAs) to reflect the new design and to meet the PRA quality and scope requirements and (2) analyses to determine compliance with the risk acceptance criteria and the defense-in-depth criteria.
4. Estimate the number and types of plant design changes (on a per unit basis) that would meet the acceptance criteria for the additional analyses.
5. Estimate the costs of implementing the plant design changes that meet the acceptance criteria for the additional analyses.
6. Estimate any operational costs and/or savings resulting from implementing the above design changes.
7. Estimate any anticipated changes in licensee information collection, reporting, and retention burden that could result if this rulemaking is implemented.

Dated at Rockville, Maryland, this 26th day of July 2004.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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