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NRC CONSIDERS CHANGES TO REGULATIONS FOR SPECIAL NUCLEAR MATERIAL LICENSEES

The Nuclear Regulatory Commission is considering amending its regulations to provide increased confidence in the safety margin for some facilities licensed under Part 70 of Title 10 of the Code of Federal Regulations that possess and process large quantities of certain types of uranium and plutonium. The rule does not apply to the U.S. Enrichment Corporation's gaseous diffusion plants, which are regulated under Part 76.

The proposed amendments would require affected licensees to analyze their facilities carefully to identify potential accidents. The licensees would have to take actions to reduce the likelihood and effects of the postulated accidents if their consequences could exceed specified criteria. The amendment updates a rule under which licensees generally have operated safely for many years by clarifying the safety basis used by NRC to license such facilities.

The proposed changes are an outgrowth of an NRC review conducted after a fuel fabrication facility had a near criticality incident (i.e., a nuclear chain reaction) in May of 1991. As a result of this review, NRC took a number of steps to improve licensee safety programs, event reporting to NRC, and regulatory guidance. In addition, NRC concluded in 1993 that, in order to increase confidence in the safety margin, the regulations should be amended to require similar licensees to perform an integrated safety analysis. Such an analysis would identify:

- (1) Plant and external hazards and their potential for causing accidents;
- (2) Potential accident sequences and their likelihood and consequences;
- (3) Structures, systems, equipment, components and activities of personnel relied on to prevent or mitigate potential accidents at the facility.

Licensees have agreed to the need for a formal safety analysis, and some licensees have committed during the last license renewal to perform such an analysis and submit the results to NRC for review by a specific date.

The proposed rule represents an extraordinary effort by the NRC and the fuel cycle industry and other stakeholders over several years that has included review of two draft rules, a petition for rulemaking, several public meetings and workshops, and Commission briefings by NRC staff and representatives of the fuel cycle industry. Since August 1998, NRC has used an enhanced public process to identify areas of mutual concern and those where agreement could be reached in whole or in part. To facilitate this process, the Commission held two public briefings, and the staff held four public workshops and made extensive use of the NRC's Internet website to disseminate information and solicit input from stakeholders. These efforts have significantly narrowed the differences between the staff and stakeholders on the proposed amendments to Part 70. In addition, during the public comment period on the proposed rule

and while finalizing the rule, the staff intends to conduct additional public meetings and use the NRC website for information exchange.

The regulations would apply to licensees that are authorized to possess a “critical mass” of “special nuclear material” and that are engaged in one of the following activities: enriched uranium processing, fabrication of uranium fuel or fuel assemblies, uranium enrichment (other than USEC’s gaseous diffusion plants), enriched uranium hexafluoride conversion, plutonium processing, fabrication of mixed-oxide fuel or fuel assemblies, scrap recovery of special nuclear material, or any other activity involving a critical mass of special nuclear material that the Commission determines could significantly affect public health and safety.

“Special nuclear material” refers to plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Commission determines to be special nuclear material, but does not include natural uranium. The term also refers to any material artificially enriched by any of these materials.

For the purposes of this rulemaking, a “critical mass” of special nuclear material contains more than: 700 grams of uranium-235; 520 grams of uranium-233; 450 grams of plutonium; 1,500 grams of uranium-235, if no uranium enriched to more than 4 percent by weight of uranium-235 is present; 450 grams of any combination thereof; or one-half such quantities if massive moderators or reflectors made of graphite, heavy water, or beryllium may be present.

Currently the NRC’s regulation of licensees authorized to possess special nuclear material concentrates on protecting public health and safety during nuclear activities conducted under normal operations. The proposed amendments would supplement NRC’s regulatory framework to address explicitly the potential exposure of workers or members of the public to radiation and hazardous chemicals as a result of accidents.

The proposed new regulations would require licensees to perform an integrated safety analysis, as described above, which would include identification of the radiological and related chemical consequences of credible potential accidents at their facilities. A plan for performing the analysis would have to be submitted within six months of the effective date of the amendments to the regulations, and the analysis would have to be conducted within four years of the effective date of the rule. A summary of the analysis would have to be submitted at the time of license application. All related documentation on-site and at the NRC would have to be maintained on a regular basis.

Licensees further would have to establish a safety program that provides reasonable assurance of protection against accidents that could result in releases of radioactive materials or certain related hazardous chemicals in excess of NRC criteria.

Licensees also would have to ensure that structures, systems, equipment and components relied on for safety are designed, constructed and maintained so that they will perform their safety function. Licensee personnel would have to be trained and tested to confirm their qualifications to perform their safety duties. Appropriate management measures would have to be established to ensure that items relied on for safety are available and reliable to perform their function when needed.

Other provisions of the proposed revisions to the regulation are discussed in a *Federal Register* notice to be issued shortly. The staff intends to conduct public meetings to discuss the proposed rule and related guidance which will be announced in the *Federal Register* and on NRC's website.

Interested persons are invited to submit comments, within 75 days of the *Federal Register* notice, to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemakings and Adjudications Staff. Comments may also be submitted electronically through the NRC web site at <http://ruleforum.llnl.gov/cgi-bin/rulemake>.

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