

The views expressed in this document do not necessarily represent the views of the U.S. Nuclear Regulatory Commission (NRC) and have not had complete staff review. The information in this document represents NRC staff-developed draft language for possible inclusion in a package to be provided for Commission approval for publication as a proposed rule. In accordance with Commission direction, NRC staff is providing this information at this time for preliminary public comment and discussion. The public will also have an opportunity for formal comment once the Commission approves publication of the proposed rule.

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#### **1. Release Notes**

A. We are providing a redline/strikeout version of §70.60 that identifies changes adopted since the last posting of a revision of §70.60 on December 17, 1998. (see [http://techconf.llnl.gov/cgi-bin/downloader/dom\\_lic\\_lib/042-0042.htm](http://techconf.llnl.gov/cgi-bin/downloader/dom_lic_lib/042-0042.htm)). The text includes the complete contents of §70.60 as currently proposed.

B. The purpose of the following redraft of §70.60 is to address comments related to criticality issues by the Nuclear Energy Institute (NEI) provided by letter dated December 17, 1998 (see [http://techconf.llnl.gov/cgi-bin/downloader/dom\\_lic\\_lib/042-0046.htm](http://techconf.llnl.gov/cgi-bin/downloader/dom_lic_lib/042-0046.htm)), the American Nuclear Society (see [http://techconf.llnl.gov/cgi-bin/downloader/dom\\_lic\\_lib/042-0049.htm](http://techconf.llnl.gov/cgi-bin/downloader/dom_lic_lib/042-0049.htm)), and comments by other interested parties. This revision also addresses NEI comments related to criticality issues made at the January 13, 1999, public meeting. The primary impetus behind this change is industry concern that an inadvertent criticality is specifically identified as a “high-consequence” event under the previous revision of §70.60. Industry’s view is that the evaluation of an inadvertent criticality accident should be treated consistent with evaluations of other potential industrial accidents and, based on historical events, most inadvertent criticalities do not result in consequences that are otherwise described as “high-consequence” in the rule.

The intent of the staff for specifically addressing an inadvertent criticality as “high-consequence” was to lessen the risk of an inadvertent criticality by reducing the frequency of the potential event rather than by reducing its consequence (i.e., mitigation). As shown by the new proposed wording in §70.60(b), the staff has decided not to specify an inadvertent criticality as a “high-consequence” event and, instead, has opted to insert a new subsection (d) to address the staff’s preference that the risk of inadvertent criticalities should be lessened through reduction in frequency rather than through mitigation. The language in (d) was selected to make the rule consistent & compatible with ANS 8.1 standard.

C. Minor editorial changes were made throughout 70.60 (as shown below in redline and strikeout) to allow for the inclusion of the new section (d) and better clarify the rule language (use of “additional” vs. “further” in 70.60(b) and (c) and addition of “be available and reliable to” in 70.60(e)).

#### **2. Clarifying Modifications to §70.60**

§70.60 Performance Requirements for Certain Licensees Authorized to Possess Special Nuclear Material in Quantities Sufficient to Form a Critical Mass.

(a) Each applicant or licensee required to establish and maintain a safety program pursuant to §70.62 of this Part shall demonstrate, in the integrated safety analysis, compliance with the performance requirements in paragraphs (b), ~~and (c)~~, and (d) of this section.

(b) The risk of each credible high-consequence event must be limited, unless the event is highly unlikely, through the application of engineered controls, administrative controls, or both, that reduce the likelihood of occurrence of the event or ~~(except for nuclear criticality)~~ its consequence. Application of ~~further~~ additional controls is not required for those high-consequence events demonstrated to be highly unlikely. High-consequence events are those internally or externally initiated events that result in:

- ~~(1) a nuclear criticality;~~
- (2)(1) an acute worker dose of 1 Sv (100 rem) or greater total effective dose equivalent;
- (3)(2) an acute dose outside the controlled site boundary of 0.25 Sv (25 rem) or greater total effective dose equivalent;
- (4)(3) an intake outside the controlled site boundary of 30 mg or greater of uranium in soluble form; or
- (5)(4) an acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that: (i) could endanger the life of a worker, or (ii) outside the controlled site boundary, could lead to irreversible or other serious, long-lasting health effects. If an applicant possesses or plans to possess quantities of material capable of such chemical exposures, then the applicant shall propose appropriate quantitative standards for these health effects, as part of the application information submitted pursuant to §70.65 of this Part.

(c) The risk of each credible intermediate-consequence event must be limited, unless the event is unlikely, through the application of engineered controls, administrative controls, or both, that reduce the likelihood of occurrence of the event or its consequence. Application of ~~further~~ additional controls is not required for those intermediate-consequence events demonstrated to be unlikely. Intermediate-consequence events are those internally or externally initiated events, that are not high-consequence events, that result in:

- (1) an acute worker dose of 0.25 Sv (25 rem) or greater total effective dose equivalent;
- (2) an acute dose outside the controlled site boundary of 0.05 Sv (5 rem) or greater total effective dose equivalent;
- (3) a 24-hour averaged release of radioactive material outside the restricted area in concentrations exceeding 5000 times the values in Table 2 of Appendix B to 10 CFR Part 20; or
- (4) an acute chemical exposure to an individual from licensed material or hazardous chemicals produced from licensed material that: (i) could lead to irreversible or other serious, long-lasting health effects to a worker, or (ii) outside the controlled site boundary, could cause mild transient health effects. If an applicant possesses or plans to possess quantities of material capable of such chemical exposures, then the applicant shall propose appropriate quantitative standards for these health effects, as part of the application information submitted pursuant to §70.65 of this Part.

(d) In addition to complying with paragraphs (b) and (c) of this section, the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical including use of an acceptable margin of subcriticality for safety. Prevention of the reaction shall be the primary means of protection against the consequences of nuclear criticality accidents.

(e) Each engineered or administrative control necessary to comply with subsection (b), ~~or (c)~~, or (d) of this section shall be designated as an item relied on for safety. The safety program, established and maintained pursuant to §70.62 of this Part, shall ensure that each item relied on for safety will **be available and reliable to** perform its intended function when needed and in the context of the performance requirements of this section.