[7590-01-P]

NUCLEAR REGULATORY COMMISSION

Notice of Availability of Interim Staff Guidance Documents For Fuel Cycle Facilities

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of availability.

FOR FURTHER INFORMATION CONTACT: James Smith, Project manager, Technical Support Group, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20005-0001. Telephone: (301) 415-6459; fax number: (301) 415-5370; e-mail: jas4@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

The Nuclear Regulatory Commission (NRC) continues to prepare and issue Interim Staff Guidance (ISG) documents for fuel cycle facilities. These ISG documents provide clarifying guidance to the NRC staff when reviewing licensee integrated safety analysis, license applications or amendment requests or other related licensing activities for fuel cycle facilities under Subpart H of 10 CFR Part 70. FCSS-ISG-08 has been issued and is provided for information.

II. Summary

The purpose of this notice is to provide notice to the public of the issuance of FCSS-ISG-08, Revision 0, which provides guidance to NRC staff to address accident sequences that may result from natural phenomena hazards relative to license application or amendment request under 10 CFR Part 70, Subpart H. FCSS-ISG-08, Revision 0, has been approved and issued after a general revision based on NRC staff and public comments on the initial draft.

III. Further Information

The document related to this action is available electronically at the NRC's Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html. From this site, you can access the NRC's Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS ascension number for the document related to this notice is provided in the following table. If you do not have access to ADAMS or if there are problems in accessing the document located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr@nrc.gov.

Interim Staff Guidance	ADAMS Accession Number
FCSS Interim Staff Guidance-08, Revision 0	**ML052650305**

This document may also be viewed electronically on the public computers located at the NRC's PDR, O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The PDR reproduction contractor will copy documents for a fee. Comments on these documents may be forwarded to James Smith, Project Manager, Technical Support Group, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20005-0001. Comments can also be submitted by telephone, fax, or e-mail which are as follows: Telephone: (301) 415-6459; fax number: (301) 415-5370; e-mail: jas4@nrc.gov.

Dated at Rockville, Maryland this 28 day of October 2005.

For the Nuclear Regulatory Commission.

/RA/

Melanie A. Galloway, Chief,
Technical Support Group,
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

FCSS Interim Staff Guidance-08, Revision 0
Natural Phenomena Hazards

Prepared by
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

Issue

Additional guidance is required to address accident sequences that may result from natural phenomena hazards in the context of a license application or an amendment request under Title 10 Code of Federal Regulations (10 CFR) Part 70, Subpart H.

Introduction

This Interim Staff Guidance (ISG) provides additional guidance for reviewing the applicant's (or licensee's) evaluation of natural phenomena hazards up to and including "highly unlikely" events for both new and existing facilities.

Discussion

The performance requirements of 10 CFR 70.61 for facilities processing special nuclear materials require that individual accident sequences resulting in high consequences to workers and the public be "highly unlikely" and that sequences resulting in intermediate consequences to these receptors be "unlikely." Although the threshold levels that differentiate high consequence events from intermediate consequence events are established in the regulations, the definitions of "highly unlikely" and "unlikely" are not. Definitions of these terms must be described in the integrated safety analysis (ISA) summary submitted by applicants and licensees according to 10 CFR 70.65(b)(9) and subjected to staff approval. Further description

of the acceptance criteria for the definitions of these terms can be found in Chapter 3 of NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility."

The implementation of these requirements may vary somewhat due to different definitions of likelihood proposed by different applicants (or licensees).[1] The consequence thresholds of the performance requirements (except for chemical releases) are specified quantitatively in the regulation. The regulation and its performance requirements pertain to existing facilities as well as proposed facilities and apply to man-made external hazards and natural phenomena hazards as well as process hazards. However, new facilities and new processes at existing facilities must also address 10 CFR 70.64 requirements which includes the baseline design criterion for natural phenomena hazards (10 CFR 70.64(a)(2)). This baseline design criterion requires that "the design must provide for adequate protection against natural phenomena with consideration of the most severe documented historical events for the site." The Statement of Considerations (Reference 2) describes the application of the baseline design criteria as consistent with good engineering practice, which dictates that certain minimum requirements should be applied to design and safety considerations. The baseline design criteria must be applied to the design of new facilities and new processes at existing facilities, but does not require retrofits to existing facilities or existing processes (e.g., those housing or adjacent to the new processes). Also included in 10 CFR 70.64(b) is a requirement for incorporation of

[1] For natural phenomena, deterministically defined events such as the probable maximum flood (PMF) or safe shutdown earthquake (SSE) which are used as reactor design bases can also be applied to 10 CFR Part 70 facilities as "highly unlikely" events. The actual probability (or likelihood) of such events may be difficult to define quantitatively and varies from site to site.

defense-in-depth in design and a requirement to prefer engineered controls over administrative controls.

New structures associated with facilities being reviewed, such as the gas centrifuge facilities and the Mixed Oxide Fuel Fabrication Facility (MOX), will be designed and constructed to meet the seismic regulatory requirements. Hence, these facilities and additional new facilities to be licensed under 10 CFR Part 70 are not expected to present designs with seismic deficiencies. New facilities can also be expected to be above a “highly unlikely” flood such as the PMF and can be expected to withstand tornado winds and missiles, if necessary.

Most structures at existing nuclear fuel cycle facilities are built to a model building code which includes meeting a design basis earthquake having an exceedance probability of 2 X 10^{-3} per year to less than 10^{-3} per year (Department of Energy (DOE) Standard-1020-2002, Appendix C). Existing facilities are generally sited above the 100-year floodplain and are designed for wind as well as snow and ice loading as specified in applicable building codes. Extreme natural events such as “highly unlikely” floods and/or earthquakes have not been calculated for many existing sites, and it would be expensive and time consuming to do so.

The staff believes that many existing facilities can be shown to be in compliance with, or, at least, near compliance with, the performance requirements of the regulation by accounting for conservatisms in the seismic, flooding, and wind design of the facility. In addition, relatively minor engineered improvements and administrative measures may further enhance safety at least with respect to the public and other off-site receptors.

Seismic Hazards

Potential damage to and/or failure of items relied on for safety (IROFS) due to ground movement and/or the seismic response of adjacent or interior IROFS must be considered in the ISA/ISA Summary accident sequence evaluations. Damage or failures that also should be considered include:

1. Seismic-induced failure of a facility component which is not an IROFS but which can fall and damage an IROFS, for example, a heavy load drop from a crane on a container.

2. Displacement of adjacent IROFS during a seismic event causing them to pound together.

3. Displacement of adjacent components resulting in failure of connecting pipes or cables resulting in flooding, fires, and/or releases of radiological or chemical materials.

Seismic event evaluations must also consider potential multiple failure of IROFS. For example, multiple failures of tanks.

DOE has also recognized the difference between earthquake design probability and the probability that a safety component cannot perform its function. To quantify this difference, DOE has developed a risk reduction factor, R, as the ratio between the seismic hazard exceedance probability and the performance goal probability. Conservatism in nuclear facility design arising from factors such as use of prescribed analysis methods, specification of material strengths, and limits on inelastic behavior explains at least part of this apparent

reduction in actual risk. This risk reduction factor is discussed in Appendix C of DOE-STD-1020-2002 (Reference 3).

For a consequence to occur to the public or external site workers, licensed material or hazardous chemicals that could affect the safety of licensed material must be released through at least one, and often two, confinement barriers, for example:

1. Storage containers, gloveboxes, tanks, or handling devices,
2. Ventilation system dynamic confinement and filtration, and/or
3. Building structural shell.

Criticalities, on the other hand, may result from the introduction of a moderator or loss of safe geometric control of confined materials.

By using risk reduction factors calculated for a facility and its specific components and/or making estimates of the degree of failure by comparison with the observed behavior of similarly constructed buildings during severe earthquakes, reasonable scenarios can be postulated. These scenarios may not release all the material at risk or present an unimpeded leak path to receptors. For example, some facilities might be able to show that even with an earthquake that is “highly unlikely” only certain types of containers or confinement systems are likely to be breached. If the amount of material contained in such containers is variable, then that probabilistic component may be factored into the overall likelihood of the accident sequence. If employing some of these mitigating considerations to the analysis requires reliance on special containers or procedures, then additional IROFS may also be needed. Another factor to be considered is the likely rate of release based on the damage sustained. For example, some

facilities may lose dynamic confinement but maintain building integrity. In some processes, radiological and/or chemically hazardous material is held inside its primary containment at subatmospheric pressure. In these cases, even though the primary containments are inside a structure designed to withstand less than a “highly unlikely” earthquake, the subatmospheric conditions may be sufficient to limit both facility worker and off-site doses in the event of a greater earthquake. For example, an earthquake that results in limited subatmospheric containment losses may allow adequately trained workers to evacuate and/or take mitigative actions. The buildings containing cylinders of liquid UF_6 at gas centrifuge facilities are designed for a “highly unlikely” earthquake. In addition, some buildings at one of the proposed facilities are equipped with a seismically-activated interlock (an IROFS) that will shutoff the buildings’ heating, ventilation, and air conditioning system during an event, thus limiting any leakage of UF_6 to the outside.

Flooding Hazards

Most fuel cycle licensees do not require large quantities of cooling water and, therefore, do not need to be located near large bodies of water. A site licensed under 10 CFR Part 70 does not need to meet prescriptive flood protection requirements but does have to meet the performance requirements for all credible events including flooding. A site meeting the flood protection requirements of a commercial reactor should be considered as being designed or located adequately to withstand a “highly unlikely” flooding event. NUREG-1407, “Procedural and Submittal Guidance for the Individual Plant Examination of External Events for Severe Accident Vulnerability,” Section 2.4, states that the design basis flood (which for river sites is the probable maximum flood) as described in Regulatory Guide 1.59, “Design Basis Flooding for Nuclear Power Plants,” is estimated to have an exceedance frequency of less than 10^{-5} per

year. Sites that do not meet this level of protection can still meet the 10 CFR 70.61 performance requirements but have to be considered on an individual basis.

In evaluating the effects of flooding on existing facilities, the following flood-related hazards should be considered:

River Flooding

- Inundation and hydrostatic loading
- Dynamic forces
- Wave action
- Sedimentation and erosion
- Ice loading

Upstream Dam Failures

- Inundation and hydrostatic loading
- Dynamic forces
- Erosion and sedimentation

Precipitation/Local Storm Runoff

- Inundation (local ponding) and hydrostatic loading
- Dynamic loads (flash flooding)

Tsunami, Seiche, Hurricane Storm Surge

- Inundation and hydrostatic loading

- Dynamic forces
- Wave action

Methods for determining these flooding and water-related effects for reactor sites are described in American National Standards Institute/American Nuclear Society 2.8, “Determining Design Basis Flooding at Power Reactor Sites.” These methods can be applied to 10 CFR 70.61 analyses with less conservatism in some of these parameters.

A standard siting requirement for residential and commercial developments is to be above the 100-year floodplain. For large river basins, warning time and time to secure materials and evacuate personnel will probably be available. For small streams there may be relatively little warning in regard to thunderstorms and localized rainfall. In such cases, rapid actions may be the only administrative protection available. In evaluating the effectiveness of proposed protection, the effects of inundation, hydrostatic loading, erosion, and sedimentation will need to be evaluated. At a minimum, this would require that criticality events be prevented and materials remain confined within site structures.

At some sites, a delineation of the 500-year floodplain may also be available. If the site is above the 500-year floodplain, flooding may be considered an unlikely event[2] depending on the quality of the estimate. In this category, criticality events should still be prevented, but the breaching of a limited number of material containers may be allowable under the performance

---

[2] Even if the licensee defines unlikely as less than 10^{-3} per year for the process sequences in the ISA Summary, the conservative assumptions inherent in most flood plain hydrologic studies such as those performed for Federal Emergency Management Agency flood insurance rate maps should justify the consideration of flooding above the 500-year floodplain as an unlikely event.

requirements (up to 25 rem for the public, up to 100 rem for workers, and a specified release limit) for events, that in terms of likelihood, are between "unlikely" and "highly unlikely."

In addition to the facility's location relative to the 100-year or 500-year floodplains, the effects of local intense precipitation and snow load should be considered. Local intense precipitation especially with snow can result in roof collapse and localized site flooding. Normally, protection from local precipitation and snow is relatively easy to achieve in roof design and local site drainage design.

Wind and Tornado Loading

Wind design for an existing facility if prescribed by an applicable building code would have an annual exceedance probability of greater than or equal to 2×10^{-2}. At such relatively high probabilities, tornado design criteria are not specified. However, depending on the geographical location of the facility, the effects of a tornado with an annual exceedance probability of 10^{-5} or greater may need to be considered.

Wind forces on walls of structures should be determined using appropriate pressure coefficients, gust factors, and other site-specific adjustments. If the wind is likely to blow inside the structure, either through design or wind-driven missile vulnerability, the effects of wind on internal IROFS requires consideration. If the winds are from a tornado, the effects of the atmospheric pressure change (APC) associated with the tornado must be considered. Normally, ventilation systems are most vulnerable to APC but windows, buried tanks, and sand filters can also be affected.

For straight winds, hurricanes, and weak tornadoes, missile criteria as specified in Table 3-3 of DOE-STD-1020-2002 (Reference 3) may be considered. The missile specified is a 15 pound, 2 inches by 4 inches plank at a specified elevation and impact velocity. For facilities which may be subjected to more severe tornado missiles, the guidance in Tables 3-4 and/or 3-5 of DOE-STD-1020 may be followed. For the tornado, a 3,000 pound automobile rolling and tumbling on the ground should also be considered. For such evaluations, the probability of the entire sequence should be considered, and missile criteria from either Tables 3-4 or 3-5 of DOE-STD-1020 may be used as appropriate.

Considerations for Existing Processes at Existing Facilities

Existing processes at existing facilities are not required to address 10 CFR 70.64 baseline design criteria. They must still meet the performance requirements of 10 CFR 70.61 including accidents caused by natural phenomena, for which the staff may require additional IROFS to - meet the performance requirements. For existing facilities, additional administrative controls/IROFS can be used to meet the performance requirements without the need for design features normally required by accepted engineering practice. For plants where near compliance can be obtained and complete compliance will be relatively costly, an exemption to the regulation may be requested.

As discussed earlier, many existing 10 CFR Part 70 facilities are not designed for an earthquake beyond that specified in applicable building codes. Although this design may provide fairly good seismic protection to the structure, it may not protect internal equipment. Also, an existing facility may not be designed to any specific seismic criteria in which case its

ability to withstand earthquakes can only be estimated based on comparison with similar structures or through complex structural analysis. In such cases, licensees may add additional IROFS to meet the performance requirements. An example where such IROFS (procedures and upgrades) may be effectively implemented could be a facility where the consequences of a release of licensed material to the public in a seismic event would be from fires and/or explosions. In this case, fixes such as seismically qualified flammable gas shutoff valves or electrical shutoffs might provide a large decrease in potential seismic consequences.

In regard to flooding, flood elevations beyond that of the 100-year flood may not have been determined for the site. For sites in close proximity to a river, these determinations could be expensive and time consuming. For these cases, flood warning time may allow measures such as moving material at risk and/or blocking doors and openings in the facility structure.

Improving a facility’s ability to withstand high winds, rain and snow loads, and exterior fires can likewise be improved with a combination of administrative procedures and engineered improvements. Removing material at risk from under walls or roofs that are not seismically designed can reduce potential releases in case of collapse from winds or roof loads.

Exemptions to the regulation may still be required for existing facilities even with administrative and engineered improvements. In regard to consequences to the public, complete compliance with 10 CFR 70.61 using realistic assumptions should be the goal if obtainable. Compliance with 10 CFR 70.61 regarding consequences to facility workers may require a request for an exemption once personnel protective equipment, emergency procedures, and worker training is accounted for. In evaluating a request for an exemption to the regulation, the expected operational life of the facility should also be factored into the determination of risk.

Considerations for New Processes at Existing Facilities

The design of new processes at existing facilities must address natural phenomena hazards in accordance with 10 CFR 70.64 (a)(2) as well as the performance requirements of 10 CFR 70.61. Nevertheless, new processes at existing facilities may have the same problems in demonstrating compliance with 10 CFR 70.61 in regard to accident sequences initiated by natural phenomena as existing facilities based on the design and/or siting of the original structures. In the case of new processes, the Nuclear Regulatory Commission staff should expect compliance with the performance requirements of 10 CFR 70.61 to the extent possible given the existing facility design and location. New processes at existing facilities also must meet the requirements of 10 CFR 70.64(b) which requires defense-in-depth and a preference for engineered controls over administrative controls. However, structural improvements, permanent flood barriers, and other engineered improvements which could be considered retrofits cannot be required by the staff for application to existing structures. New structural features within existing structures to prevent breaches in containment in the event of natural phenomena hazards may be considered, however. An example might be a seismically-designed vault to hold radioactive materials associated with a new process. In regard to new processes, engineered controls, where feasible, are preferred over administrative procedures that might otherwise be proposed for an existing process with a limited operational lifetime. Such engineered improvements may not be required for licensing but could be scheduled to replace administrative procedures or other long-term compensatory measures on a timely basis after the start of operations. The object is to encourage engineered safety in new processes compared to equivalent existing process while recognizing the restraints of the existing structures and location. Although primarily aimed at reducing risk to the public, the emphasis

on engineered safety may also be applied to worker consequences in a way consistent with what has been accepted at other facilities.

Regulatory Basis

10 CFR 70.61 specifies performance requirements associated with risks identified by an ISA.

10 CFR 70.64 specifies requirements for new facilities or new processes at existing facilities including baseline design criteria (a)(2), “Natural Phenomena Hazards.”

Technical Review Guidance

In reviewing the applicant’s evaluation of the effects of natural phenomena on its facility, it should be recognized that estimates of “unlikely” and “highly unlikely” natural phenomena such as the PMF or SSE may not exist for the particular site. Hence, extrapolation and/or transposition of extreme event estimates made for other relatively nearby facilities (such as power reactor sites) should be allowed where feasible and technically justifiable. In addition, sophisticated probabilistic tools such as Bayesian analysis or Monte Carlo sampling methods need not be employed to improve the estimate of likelihoods of natural phenomena event sequences unless desired by the applicant (or licensee). For the purpose of determining appropriate values of extreme events, deterministic events such as the probable maximum flood or safe shutdown earthquake can be used in place of purely probabilistically determined “highly unlikely” events and may be preferable, depending on the quality of historical data. Where extreme events need to be coupled with other probability-driven mechanisms such as

the release fraction or transport pathway, already low likelihood combinations do not have to be made even less likely with the use of conservative parameters.

For existing facilities, due credit should be given to analysis assumptions and administrative controls, emergency procedures, and active engineered controls that do not change the design bases of the facility structures to natural phenomena. If the ISA/ISA Summary demonstrates that the existing facility is near compliance (within an order of magnitude of a likelihood threshold or within 50 percent of meeting a consequence threshold , but not both), an exemption to the regulation may be considered.

An example evaluation for an amendment request is provided in the appendix to this ISG.

Recommendation

This guidance should be used to supplement NUREG-1520, Chapter 3, Integrated Safety Analysis.

References

U.S. Code of Federal Regulations, *Title 10, Energy,* Part 70, “Domestic Licensing of Special Nuclear Material.”

U.S. Nuclear Regulatory Commission (U.S.) (NRC). NUREG-1520, “Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility.” NRC: Washington, D.C. March 2002.

Nuclear Regulatory Commission (U.S.), Washington, D.C. “Domestic Licensing of Special Nuclear Material; Possession of a Critical Mass of Special Nuclear Material.” Federal Register : Vol. 65, No. 181, pp. 56211- 562331. September 18, 2000.

NUREG-1407, "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities." NRC: Washington, D.C. June 1991.

Regulatory Guide 1.59, Revision2, "Design Basis Flooding for Nuclear Power Plants." NRC: Washington, D.C. August 1977.

U.S. Department of Energy (U.S.) (DOE). DOE-Standard-1020-2002, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities." DOE: Washington, D.C. 2002

American National Standard Institute/American Nuclear Society (ANSI/ANS). ANS-2.8, "Determining Design Basis Flooding at Power Reactor Sites." ANSI/ANS: July 1992.

Approved: _________**/RA/**____________ Date: _10/28/05__
Director, Division of Fuel Cycle Safety
and Safeguards, NMSS

Appendix

Example Natural Phenomena Hazard Review

for Compliance with 10 CFR 70.61

This example review is for an amendment to authorize operations in a blended low-enriched uranium oxide conversion building (OCB). The site is located near a river and is just above the 100-year flood plain of a nearby creek. The Effluent Process Building (EPB) was also part of the amendment but was not evaluated because the quantities of radioactive material or hazardous chemicals (that come under NRC regulation) contained in the EPB are not considered sufficient to exceed the 10 CFR 70.61 consequence threshold for “unlikely” events.

Seismic Evaluation

The OCB is of reinforced concrete construction and is constructed to seismic criteria contained in the Standard Building Code (SBC-1999) which is equivalent to being designed for an earthquake having a probability of exceedance of approximately 4×10^{-4} per year. Using Appendix C of DOE-STD-1020-2002, a risk reduction factor of 4 was determined by U.S. Nuclear Regulatory Commission (NRC) staff, giving the structure a likelihood of significant damage from an earthquake of 10^{-4} per year or less. Hence, the collapse or loss of building integrity from an earthquake may be considered to be “highly unlikely” as the probabilistic value of “highly unlikely” indicated by the applicant was a probability of exceedance of 10^{-4} to 10^{-5} per year. Within the building, the material at risk consists of low enriched uranyl nitrate liquid, ammonium diuranate slurry, and uranium dioxide powder. All of these materials are expected to be within containers and spillage during a seismic event is expected to be minimal. Since the building is expected to retain its integrity, the leak path factor will be relatively low even without

dynamic confinement from the ventilation system. Facility workers are expected to take actions to limit personal intake of radionuclides. The staff concludes that the OCB complies with the performance requirements of 10 CFR 70.61 with regard to seismic events.

High Winds Evaluation

The OCB structure is also designed for wind loads in accordance with the SBC-1999, and the probability of a tornado impacting the facility is less than 10^{-5} per year. Therefore, the facility needs only to be evaluated in regard to the effects of wind loads and missiles, but not for tornadoes. The reinforced concrete exterior walls of the OCB are considered by NRC staff to be adequate to withstand high wind velocities as well as missiles (from DOE-STD-1020-2002) that should be assumed for such events. A collapse of building walls due to wind forces such that radioactive material would escape is considered to be “highly unlikely” by NRC staff. In addition, the meteorological conditions likely to result in severe winds may be forecast in advance, and protective measures taken. The staff concludes that the OCB complies with the performance requirements of 10 CFR 70.61 with regard to wind events.

Flooding Evaluation

The lowest floor in the OCB is 15 feet above the 100-year flood from an adjacent creek. From a review of the topography of the site area, it appears that flooding of the site could occur, most likely, from flooding on the nearby river with coincident flooding on the adjacent creek which could back up through the railroad culvert. This event is expected to have warning time and may overtop the railroad embankment to the north of the facility and flood parts of the town near by. However, the facility is sufficiently removed from the main channel of the river such

that flood-induced scouring and erosion would not be expected. In addition, the hydrostatic loading from the flood on the exterior walls of the OCB would not be expected to cause collapse. The primary concern is inundation which could float unsecured containers within the OCB but not remove them from the facility. A criticality event can not be excluded, but could occur only in the flooded and, therefore, evacuated section of the plant and would not affect facility workers. In addition, the warning time would allow the movement of material to reduce the likelihood of a flood-induced criticality. The staff concludes that the OCB complies with the performance requirements of 10 CFR 70.61 with regard to flooding.