Spent Fuel After Cessation of Reactor Operation

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to revise its generic determination on the environmental impacts of storage of spent fuel at, or away from, reactor sites at either onsite or offsite independent spent fuel storage installations (ISFSIs) until a disposal facility can reasonably be expected to be available.

DATE: Submit comments on the proposed rule by December 8, 2008. Comments received after this date will be considered if it is practical to do so, but NRC is able to assure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Comments submitted in writing or in an electronic form will be made available for public inspection. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed.


Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, ATTN: Rulemakings and Adjudications Staff.

E-mail comments to: Rulemaking.Comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at 301–415–1677.

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. Federal workdays. (Telephone 301–415–1677).

Fax comments to: Secretary, U.S. Nuclear Regulatory Commission at 301–415–1101.

You can access publicly available documents related to this document using the following methods:

NRC’s Public Document Room (PDR): The public may examine and have copied for a fee publicly available documents at the NRC’s PDR, Public File Area O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

NRC’s Agencywide Documents Access and Management System (ADAMS): Publicly available documents created or received at the NRC are available electronically at the NRC’s Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html. From this page, the public can gain entry into ADAMS, which provides text and image files of NRC’s public documents. If you do not have access to ADAMS or if there are problems accessing the documents located in ADAMS, contact the NRC’s PDR reference staff at 1–899–397–4209, 301–415–4737, or by e-mail to pdr.resource@nrc.gov.


SUPPLEMENTARY INFORMATION:

Background

In 1990, the Commission concluded a generic rulemaking proceeding to reassess its degree of confidence that radioactive wastes produced by nuclear power plants can be safely disposed of, to determine when such disposal or offsite storage will be available, and to determine whether radioactive wastes can be safely stored onsite past the expiration of existing facility licenses until offsite disposal or storage is available. This proceeding reviewed findings the Commission had made in 1984 on these issues in a generic rulemaking proceeding which became known as the “Waste Confidence Proceeding.” The 1990 proceeding resulted in the following five reaffirmed or revised Waste Confidence findings:

1. The Commission finds reasonable assurance that safe disposal of high-level radioactive waste (HLW) and spent nuclear fuel (SNF) in a mined geologic repository is technically feasible;

2. The Commission finds reasonable assurance that at least one mined geologic repository will be available within the first quarter of the twenty-first century, and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of any reactor to dispose of the commercial HLW and SNF originating in such reactor and generated up to that time;

3. The Commission finds reasonable assurance that HLW and SNF will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all HLW and SNF;

4. The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations (ISFSIs) until a disposal facility can reasonably be expected to be available.

5. The Commission finds reasonable assurance that safe independent onsite spent fuel storage or offsite spent fuel storage will be made available if such storage capacity is needed. (55 FR 38474; September 18, 1990). These five findings form the basis of the Commission’s generic determination of no significant environmental impact
from temporary storage of SNF after cessation of reactor operation codified at 10 CFR 51.23(a):

The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations. Further, the Commission believes there is reasonable assurance that at least one mined geologic repository will be available within the first quarter of the twenty-first century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial [HLW] and [SNF] originating in such reactor and generated up to that time.

Thus, the environmental impacts of spent fuel storage for the period following the term of a reactor operating license or amendment or reactor combined license or amendment or initial independent spent fuel storage installation license or amendment need not be considered in proceedings on applications for such licenses or amendments. See 10 CFR 51.23(b).

In 1999, the Commission reviewed its Waste Confidence findings and concluded that experience and developments after 1990 had confirmed the findings and made a comprehensive reevaluation of the findings unnecessary. See 64 FR 68005; December 6, 1999.

Discussion

Although the Commission concluded in 1999 that a detailed reevaluation of the Waste Confidence findings was unwarranted, it did state that it would consider undertaking a comprehensive reevaluation of the findings when the impending repository development and regulatory activities run their course or if significant and pertinent unexpected events occur, raising substantial doubt about the continuing validity of those findings. The Commission does not believe that these criteria have been met. However, the Commission is now preparing to conduct a significant number of proceedings on combined operating license (COL) applications for new reactors. This has led NRC to explore ways in which these proceedings may be conducted more efficiently by resolving appropriate issues generically in rulemaking proceedings.

Waste confidence is such an issue. Prior to NRC’s original Waste Confidence proceeding, the Commission had stated that, as a matter of policy, it “would not continue to license reactors if it did not have reasonable confidence that the wastes can and will in due course be disposed of safely.” Natural Resources Defense Council; Denial of Petition for Rulemaking, 42 FR 34391, 34393; July 5, 1977. It has been 18 years since the Commission last conducted a formal review of its Waste Confidence findings and there may be concerns that one or more of the findings are now out-of-date or at least not sufficiently supportive of the upcoming COL proceedings. In anticipation of these concerns, the Commission has prepared an update of the 1990 findings and now proposes to revise two of the findings.

A detailed examination of its updated findings and proposals is announced separately in this issue of the Federal Register.

The update and proposed revisions to the findings have led the Commission to propose a modification of its generic determination of no significant environmental impact from the temporary storage of spent fuel after cessation of reactor operations codified at 10 CFR 51.23(a). At present, this determination is supported by findings reached in 1990 that: (1) Spent fuel can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation of the reactor that generated the fuel; (2) the Commission has reasonable assurance that a geologic repository will be available by 2025; and (3) all reactors will be able to dispose of their spent fuel within 30 years beyond their licensed life for operation. As modified, this generic determination will be simplified to state that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite ISFSIs until a disposal facility can reasonably be expected to be available. The reasons for this modification are briefly explained below and more fully in the separately published update.

Safe Storage of Spent Fuel

The Commission’s update has strengthened its confidence in the safety and security of SNF storage, both in water pools and in ISFSIs. In 1990, the Commission determined that experience with water storage of SNF continued to confirm that pool storage is a benign environment for SNF that does not lead to significant degradation of spent fuel integrity; that the water pools in which the assemblies are stored will remain safe for extended periods; and that degradation mechanisms are well understood and allow time for appropriate remedial action. Similarly, by 1990, the Commission had gained experience with dry storage systems which confirmed the Commission’s 1984 conclusions that material degradation processes in dry storage are well- understood, and that dry storage systems are simple, passive, and easily maintained. In fact, one of the bases for the Commission’s confidence in the safety of dry storage was its issuance of an amendment in 1988 to 10 CFR part 72 to address spent fuel storage in a monitored retrievable storage installation (MRS) for a license term of 40 years, with the possibility of renewal.

Under the environmental assessment for the MRS rule, the Commission found confidence in the safety and environmental insignificance of dry storage for 70 years following a period of 70 years of storage in a storage pool, for a total of 140 years of storage. See NUREG–1092: Environmental Assessment for 10 CFR Part 72 “Licensing Requirements for the Independent Storage of Spent Fuel and High-Level Radioactive Waste,” August 1984. Nothing has occurred in the intervening years which calls into question the Commission’s confidence in the safety of both wet and dry storage of SNF over long periods in the normal operation of spent fuel pools and ISFSIs. NRC has approved a 20-year license renewal for a wet ISFSI and 40-year license renewals for two dry ISFSIs.

Since 1990, the Commission’s primary focus has been on potential accidents and, since the tragic events of September 11, 2001, on security events which might lead to a radioactive release from stored SNF. Multiple studies have been undertaken by NRC and by other entities, such as the National Academy of Sciences (NAS), of the safety and security of spent fuel storage, including the potential for the draining of a spent fuel pool leading to a zirconium fire and for an airplane crashing into an ISFSI. These studies and the Commission’s regulatory actions in enhancing security at nuclear power plants (including the spent fuel pool) and at ISFSIs through issuance of orders to licensees and through new regulations have reinforced NRC’s view that spent fuel storage systems are safe and secure and without significant environmental impacts. See, e.g., Letter to Senator Pete V. Domenici from Nils J. Diaz, March 14, 2005, enclosing NRC Report to Congress on the [NAS] Study on the Safety of Commercial [SNF] Storage, March 2005; Denial of Petitions for Rulemaking: The
The Availability of a Repository

The Commission’s accumulated experience of the safety of long-term spent fuel storage with no significant environmental impact and its accumulated experience of the safe management of spent fuel storage during and after the expiration of the reactor operating license have motivated it to propose that, instead of predicting a particular date (currently 2025) for the availability of a repository, it would be more appropriate to make a general finding of reasonable assurance that SNF generated in any reactor can be stored safely and without significant environmental impacts until a disposal facility can reasonably be expected to be available. Dispensing with the 2025 date does not signify a lack of confidence that a repository will be available by that date. DOE submitted its license application for the proposed repository at Yucca Mountain, Nevada on June 3, 2008 and on September 08, 2008, NRC Staff notified DOE that it found the application acceptable for docketing (73 FR 53284; September 15, 2008). The NRC has no reason at this point to conclude that the availability of a repository by 2025 is not possible and it would be premature to revise the date for that reason. However, the Commission recognizes that a repository can only be available by that date if the Commission ultimately renders a favorable decision on the application. Those decisions must await the outcome of any NRC licensing proceedings held on the application. The Commission has many times affirmed its commitment to be an impartial adjudicator of the application and does not believe that the existence of the 2025 date poses any threat to its commitment, but the Commission now has an opportunity to reconsider the issue of repository availability and believes that deleting this date will have the advantage of removing even an appearance of prejudgment in a licensing proceeding for Yucca Mountain.

The Commission’s proposal with respect to the availability of a repository focuses attention on when it may be reasonable to expect that a repository will be available. The Commission proposes to use a “target date” approach as described in its proposed revision of Waste Confidence Finding 2. This approach is used by many nations with geologic repository programs and can be a useful vehicle for considering the complex technical and institutional issues involved in predicting repository availability. The NRC believes that it is reasonable to assume that it will be known by 2025 whether a repository is available at the Yucca Mountain site, and intends to use this date as the starting-off point for a new repository program on the assumption that, for whatever reason, a repository does not become available at Yucca Mountain. The Commission remains confident that disposal of SNF and HLW in a geologic repository is technically feasible and that DOE should be able to locate a suitable site for repository development in no more time than was needed for the Yucca Mountain repository program (about 20 years). However, both domestic and international developments have made clear that confidence in the technical feasibility of a repository alone is not sufficient to bring about the broader societal and political acceptance for a repository. Achieving this broader support for construction of a repository at a particular site involves many different types of public outreach which, based on international examples described in the update, suggests a range of 23–35 years to obtain. This means that if a new repository program began in 2025, it would be reasonable to expect that a repository would become available by 2050–2060. It must be emphasized that this does not represent a hard and fast date by which a repository must be available for safety reasons. The Commission did not define a period when a repository will be needed for safety or environmental reasons in 1990 and it is not doing so now; it is only explaining its view of when repository capacity may be reasonably expected to be available. For this reason, the Commission proposes to delete reference to the availability date for the repository from its generic determination.

Availability of Repository Capacity for Disposal of Spent Fuel From All Reactors

At present, the Commission’s generic determination of no significant environmental impact from the temporary storage of spent fuel after cessation of reactor operation includes a prediction that sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor for disposal of its spent fuel. This prediction was not based on safety or environmental considerations; it was based on finding that 30 years beyond the licensed life for operation of even the earliest reactors would not occur until after 2025. Thus, the Commission’s confidence that a repository would be available by 2025 still meant that no reactor would need to store its SNF for more than 30 years beyond its licensed life for operation. If it is assumed that a repository will not be available until 2050–2060, this prediction can no longer be maintained. There are 18 reactor licenses that will expire between 2009 and 2020 and an additional 44 licenses that will expire between 2021 and 2030. See 2007–2008 USNRC Information Digest, NUREG–1350, Vol. 19, Table 11, p.48 (Information Digest). For licenses that are not renewed, some spent fuel will need to be stored for more than 30 years beyond the licensed life for operation. There are 22 reactors which were...
formerly licensed to operate, but which have been permanently shut down. See Information Digest, Appendix B. For most of these plants, 30 years beyond the licensed life for operation will fall in the 2030s and 2040s. Thus, for virtually all of these plants, spent fuel will have to be stored beyond 30 years from the expiration of the license if a repository is not available until 2050–2060. For this reason, the Commission is proposing to modify its generic determination to delete the prediction that sufficient repository capacity will be available within 30 years beyond the expiration of the licensed life for operation on all reactors. As stated above, this was not a safety finding and the deletion is made solely to be consistent with an assumption that a repository will not be available until 2050–2060. The Commission is proposing to revise Finding 2 to predict that repository capacity will be available within 50–60 years beyond the licensed life for operation of all reactors (and is requesting public comment on whether a timeframe should be included at all in Finding 2—see below) and, consistent with this, is proposing to revise Finding 4 to find that spent fuel generated in any reactor can be stored safely and without significant environmental impact for at least 60 years beyond the licensed life for operation of the reactor.

Specific Question for Public Comment

The Commission’s proposed revision of Finding 2 to include a timeframe for availability of repository capacity within 50–60 years beyond the licensed life for operation of all reactors is based on its assessment not only of its understanding of the technical issues involved, but also predictions of the time needed to bring about the necessary societal and political acceptance for a repository site. Recognizing the inherent difficulties in making such predictions, the Commission seeks specific comment on whether it should revise its approach to Finding 2 and adopt a more general finding of reasonable assurance that SNF generated in any reactor can be stored safely and without significant environmental impacts until a disposal facility can reasonably be expected to be available. In other words, in response to the concerns raised by the U.S. Court of Appeals for the District of Columbia Circuit in State of Minnesota v. NRC, 602 F.2d 412 (1979) that precipitated the original Waste Confidence proceeding, the Commission could now say that there is no need to be concerned that spent fuel may need to be stored at onsite or offsite storage facilities at the expiration of the license (including a renewed license) until such time as a repository is available because we have reasonable assurance that spent fuel can be stored for long periods of time, safely and without significant environmental impact. Such a finding would be made on the basis of the Commission’s accumulated experience of the safety of long-term spent fuel storage with no significant environmental impact (see Finding 4) and its accumulated experience of the safe management of spent fuel storage during and after the expiration of the reactor operating license (see Finding 3).

The Commission seeks comment on this alternative revision of Finding 2 and whether additional information is needed for or accompanying changes should be made to its other Findings on the long term storage of spent fuel if such a revision of Finding 2 were to be adopted.

Summary of Proposed Amendments by Section

Section 51.23(a) would be amended to provide the Commission’s generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite ISFSIs until a disposal facility can reasonably be expected to be available.

Plain Language

The Presidential memorandum “Plain Language in Government Writing,” published June 10, 1998 (63 FR 31883), directed that the Government’s writing be in clear and accessible language. The NRC requests comments on this proposed rule specifically with respect to the clarity and effectiveness of the language used. Comments should be sent to the NRC as explained in the ADDRESSES portion of this document.

Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995 (Pub. L. 104–113) requires that Federal agencies use technical standards that are developed or adopted by voluntary consensus standards bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. In this proposed rule, NRC would modify its generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite ISFSIs. This action does not constitute the establishment of a standard that establishes generally applicable requirements.

Finding of No Significant Environmental Impact: Availability

This proposed rule amends 10 CFR part 51 of the Commission’s regulations to modify the generic determination currently codified in Part 51 which was made by the Commission in the 1990 Waste Confidence rulemaking proceeding. That generic determination was that for at least 30 years beyond a reactor’s licensed life for operation (which may include the term of a revised or renewed license) no significant environmental impacts will result from the storage of spent fuel generated in that reactor in its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations. The proposed modification provides that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations until a disposal facility can reasonably be expected to be available. The environmental analysis on which the revised generic determination is based can be found in the proposed revision and update to the Waste Confidence findings published elsewhere in this issue. This proposed rulemaking formally incorporating the revised generic determination in the Commission’s regulations has no separate independent environmental impact. The proposed revisions and update to the Waste Confidence findings are available as specified in the ADDRESSES section of this notice.

Paperwork Reduction Act Statement

This proposed rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150–0021.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to a request for information or an information collection requirement unless the requesting document
displays a currently valid OMB control number.

**Regulatory Analysis**

A draft regulatory analysis has not been prepared for this proposed regulation because this regulation does not establish any requirements that would place a burden on licensees.

**Regulatory Flexibility Certification**

Under the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, would not have a significant economic impact on a substantial number of small entities. The proposed rule would describe a revised basis for continuing in effect the current provisions of 10 CFR 51.23(b) which provides that no discussion of any environmental impact of spent fuel storage in reactor facility storage pools or ISFSIs for the period following the term of the reactor operating license or amendment or initial ISFSI license or amendment for which application is made is required in any environmental report, environmental impact statement, environmental assessment, or other analysis prepared in connection with certain actions. This rule affects only the licensing and operation of nuclear power plants or ISFSIs. Entities seeking or holding Commission licenses for these facilities do not fall within the scope of the definition of “small entities” set forth in the Regulatory Flexibility Act or the size standards established by the NRC at 10 CFR 2.810.

**Backfit Analysis**

The NRC has determined that the backfit rule (§§ 50.109, 70.76, 72.62, or 76.76) does not apply to this proposed rule because this amendment would not involve any provisions that would impose backfits as defined in the backfit rule. Therefore, a backfit analysis is not required.

**List of Subjects in 10 CFR Part 51**

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 553, the NRC is proposing to adopt the following amendment to 10 CFR Part 51.

**PART 51—ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS**

1. The authority citation for Part 51 continues to read as follows:


2. In § 51.23, paragraph (a) is revised to read as follows:

   **§ 51.23 Temporary storage of spent fuel after cessation of reactor operation—generic determination of no significant environmental impact.**

   (a) The Commission has made a generic determination that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin or at either onsite or offsite independent spent fuel storage installations until a disposal facility can reasonably be expected to be available.

   * * * * *

   Dated at Rockville, Maryland, this 29th day of September 2008.

   For the Nuclear Regulatory Commission.

   **Annette L. Vietti-Cook,**

   Secretary of the Commission.

   [FR Doc. E8–23384 Filed 10–8–08; 8:45 am]

**BILLING CODE 7590–01–P**

**NUCLEAR REGULATORY COMMISSION**

**10 CFR Part 51**

[Docket ID—2008–0482]

**Waste Confidence Decision Update**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Update and proposed revision of Waste Confidence Decision.

**SUMMARY:** On September 18, 1990, the Nuclear Regulatory Commission (NRC or Commission) issued a decision reaffirming and revising, in part, the five Waste Confidence findings reached in its 1984 Waste Confidence Decision. The 1984 decision and the 1990 review were products of rulemaking proceedings designed to assess the degree of assurance that radioactive wastes generated by nuclear power plants can be safely disposed of, to determine when such disposal or offsite storage would be available, and to determine whether radioactive wastes can be safely stored onsite past the expiration of existing facility licenses until offsite disposal or storage is available. The Commission has decided to again undertake a review of its Waste Confidence findings as part of an effort to enhance the efficiency of combined operating license proceedings for applications for nuclear power plants anticipated in the near future. To assure that its Waste Confidence findings are up-to-date, the Commission has prepared an update of the findings and proposes to revise two of the findings. The purpose of this notice is to seek public comment on the update and the proposed revisions. The Commission proposes that the second and fourth findings in the Waste Confidence Decision be revised as follows:

Finding 2: The Commission finds reasonable assurance that sufficient mined geologic repository capacity can reasonably be expected to be available within 50–60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of any reactor to dispose of the commercial high-level radioactive waste and spent fuel originating in such reactors and generated up to that time.

Finding 4: The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely without significant environmental impacts for at least 60 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor in a combination of storage in its spent fuel storage basin and either onsite or offsite independent spent fuel storage installations.

The Commission proposes to reaffirm the remaining findings. Each finding, any proposed revisions, and the reasons for revising or reaffirming them are discussed below. In keeping with the proposed revised Findings 2 and 4, the Commission is publishing concurrently...