

POLICY ISSUE NOTATION VOTE

September 28, 2004

SECY-04-0175

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations

SUBJECT: OPTIONS FOR ADDRESSING THE SURRY INDEPENDENT SPENT
FUEL STORAGE INSTALLATION LICENSE-RENEWAL PERIOD
EXEMPTION REQUEST

PURPOSE:

To obtain Commission approval of the staff's recommendation for addressing the Surry Independent Spent Fuel Storage Installation (ISFSI) license-renewal period exemption request.

SUMMARY:

In this paper, the staff discusses the U.S. Nuclear Regulatory Commission's (NRC's) requirements relating to an ISFSI license term, the historical basis for selection of the ISFSI license term, the ISFSI license-renewal process and guidance, and the Surry ISFSI license-renewal application, which included an exemption request to increase the ISFSI license-renewal period from 20 to 40 years. Recognizing that the Commission established the ISFSI license term primarily based on policy considerations, the staff has developed four options, and requests Commission approval of the staff's recommended option. These four options are presented, along with the positive and negative characteristics and resource implications of each option.

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BACKGROUND:

NRC's regulations in 10 CFR Part 72 (Part 72) provide the licensing requirements for ISFSIs, including the specification that the ISFSI license term must be for a fixed period of time not to exceed 20 years from the date of issuance. In addition, the regulations provide that the Commission may renew the ISFSI license upon application by a licensee, filed 2 years prior to the expiration of the license. The Surry ISFSI license was issued in 1986, and expires in 2006. On April 29, 2002, Virginia Electric and Power Company (Dominion) submitted an application for renewal of the Surry ISFSI license. In addition to the renewal application, Dominion requested an exemption from the provisions of 10 CFR 72.42(a), so that the license-renewal period could be extended from 20 to 40 years. The staff has completed the technical review of the renewal application and an environmental assessment. The only remaining issue to be resolved, before granting the renewed ISFSI license, is whether to grant the exemption request for an ISFSI license-renewal term of 40 years. The Surry ISFSI license will be the first dry-cask-storage ISFSI license to be renewed and, as such, the decision to either grant or deny the exemption may set a precedent for future ISFSI license-renewal requests.

On February 27, 2004, Progress Energy Carolinas, Inc. (hereafter Progress Energy) submitted an application for renewal of the H.B. Robinson ISFSI license. As Dominion did for the Surry ISFSI, Progress Energy requested an exemption from the provisions of 10 CFR 72.42(a), so that the license-renewal period for the H.B. Robinson ISFSI could be extended from 20 to 40 years. The staff is proceeding with the technical review of the H.B. Robinson application. Guidance provided by the Commission with regards to the Surry exemption request would be applied to the H.B. Robinson exemption request.

DISCUSSION:

The regulations in 10 CFR 72.42(a) provide:

Each license issued under this part must be for a fixed period of time to be specified in the license. The license term for an ISFSI must not exceed 20 years from the date of issuance. The license term for an MRS¹ must not exceed 40 years from the date of issuance. Licenses for either type of installation may be renewed by the Commission at the expiration of the license term upon application by the licensee and pursuant to the requirements of this rule.

The regulations clearly specify that the license term for an ISFSI issued under this part must be for a fixed term not to exceed 20 years from the date of issuance and that the license may be renewed at the expiration of the license term. Section 72.42(b) specifies that "[a]pplications for renewal of a license should be filed in accordance with the applicable provisions of subpart B at least 2 years prior to the expiration of the existing license." Section 72.42(c) provides that "[i]n any case in which a licensee, not less than two years prior to expiration of its existing license, has filed an application in proper form for renewal of a license, the existing license shall not expire until a final decision concerning the application for renewal has been made by the

¹Monitored retrievable storage installation (MRS)

Commission.” The provisions of 10 CFR 72.42, taken together, demonstrate that an existing license expires at the end of its term and that, therefore, a renewed license is a new license that is subject to the requirement, in 10 CFR 72.42(a), that the license term not exceed 20 years.

Since the inception of the Part 72 regulations, the Commission has limited an ISFSI license term, including renewal, to 20 years, recognizing that the renewal request may have to be repeated. The basis for this decision is rooted in the philosophy that an ISFSI provides for interim storage of spent nuclear fuel and not long-term or permanent storage. The Commission previously turned down several opportunities to lengthen the ISFSI license term: (a) in 1980, when the original Part 72 was issued; (b) in 1988, when the final rule on MRS was issued; and (c) in 1990, with the revised Waste Confidence Decision. The Commission specifically did not lengthen the license term in response to comments and requests to do so.

The original Part 72 was issued in 1980, and included language similar to existing provisions on license-renewal [see 10 CFR 72.32(a) (1981); 45 FR 74693 (November 12, 1980)]. The Commission noted that some commenters had expressed concern over the possibility that the license-renewal provision of the rule could develop into a permanent storage situation. The Commission responded that Part 72 is specifically designed to cover only interim or temporary storage of spent fuel. Further, the Commission indicated that it had looked to 10 CFR Part 70 for guidance in formulating the renewal provisions: “Licenses under Part 70 were initially subject to an annual renewal. This has since been extended to a renewal period of five years. For the static type of activity of spent fuel storage in an ISFSI, a renewal period of 20 years is considered appropriate.” See NUREG-0587, Analysis of Comments on 10 CFR Part 72, November 1980, I-13.

In response to comments submitted by industry stating that the 20-year ISFSI license was unreasonably short, the Commission acknowledged that it is reasonable to expect that some ISFSIs will operate for longer than 20 years. This recognition stemmed from the realization that some ISFSIs might need to remain in operation to provide for the necessary storage until the spent fuel could be transferred to a Federal repository or until the spent fuel backlog could be reprocessed. Regardless, the Commission concluded that it was not necessary to issue licenses for the expected useful life of such installations. See NUREG-0587, Analysis of Comments on 10 CFR Part 72, II-76.

The Commission again considered the appropriate term for an ISFSI license during the rulemaking which amended Part 72 to provide for the licensing of a monitored retrievable storage installation (MRS). Commenters urged that an ISFSI should have the same 40-year license term as the MRS. The Commission noted that “[a]n MRS as described in the NWPA² is intended for storage, but not necessarily for the same fuel since fuel will continually be moved in and out over the life of the facility in concert with operation of a repository” and that a “longer license term is therefore appropriate for an MRS considering the purpose and mode of operation of the facility.” (53 FR 31657; August 19, 1988). Two years later, the Commission again declined to revise 10 CFR 72.42 to expand the term of an ISFSI license in response to a comment that an expanded license term was warranted in light of the Commission’s proposed

²Nuclear Waste Policy Act of 1982, as amended

Fourth Finding in the revised Waste Confidence Decision that spent fuel could be safely stored without significant environmental impact for at least 100 years. (55 FR 38472, 38480; September 18, 1990). It should be noted that at-reactor spent fuel storage and management consideration and strategies in the mid-to-late 1980's were likely influenced by the enactment of the NWPA which initially contemplated, among other things, the availability of a licensed repository for the disposal of spent fuel by about 1998. Thus, in that period there was some basis to anticipate that ISFSI storage in general might not be needed for periods beyond 20 years.

Anticipating receipt of ISFSI license-renewal applications, the staff interacted with the nuclear industry in the late 1990s and early 2000s to develop a guidance document for applicants to use in submitting ISFSI license-renewal applications. On March 29, 2001, the staff issued "Preliminary NRC Staff Guidance for 10 CFR Part 72 License Renewal." This guidance parallels the 10 CFR Part 54 license-renewal process for 10 CFR Part 50 licenses. The review guidance is risk-informed in that it does not dictate a new review of the current licensing basis, but rather it focuses on those areas that could have changed over the licensing period, the likelihood of those changes, and the potential consequences should those changes occur. The review guidance is focused on age-related material degradation, and what effect that potential degradation could have on the licensing basis. The review guidance does not suggest a reexamination of the design basis for an ISFSI in the areas of criticality, thermal, structural, and shielding, except as they might be impacted by age-related materials degradation.

The Surry ISFSI license-renewal application, dated April 29, 2002, included an exemption request, to 10 CFR 72.42(a), to extend the renewal period from 20 to 40 years. The staff has reviewed the application which followed the staff's preliminary guidance document issued in 2001. The licensee developed a screening program to identify those ISFSI structures, systems, and components that are within the scope of the license-renewal process. As part of this scoping study, the licensee devised an Aging Management Review Program (AMR). The AMR involved the following four major steps:

1. Identification of in-scope subcomponents requiring AMR.
2. Identification of materials and environments.
3. Identification of aging effects requiring management.
4. Determination of the activities required to manage the effects of aging.

The staff reviewed Surry's AMR plan and application and has no outstanding technical issues associated with renewing the license for 20 years. The remaining issue is the request for an exemption to extend the renewal period to 40 years, which is largely a policy issue.

In its exemption request for the Surry ISFSI, Dominion noted that with the spent fuel pool at Surry at its capacity, operation of the two units now depends on the continued ability of the ISFSI to store spent fuel. On March 20, 2003, NRC granted the renewal of the operating licenses for Units 1 and 2, which now expire in May 2032 and January 2033, respectively. Therefore, Dominion anticipates that the Surry ISFSI license will be needed well beyond that time, depending on the availability of a final repository for the ultimate disposition of spent fuel. Dominion states that the need to submit a second ISFSI renewal application for the Surry ISFSI would be an unnecessary diversion of its own, as well as NRC's resources.

Although spent nuclear fuel has been stored in dry-cask storage systems for nearly 20 years, there is relatively limited technical data available on the long-term material degradation issues associated with dry spent fuel storage casks in the United States. NRC supported a research program at the Idaho National Engineering and Environmental Laboratory, in which one dry-storage cask was opened after the fuel had been stored for approximately 15 years. In addition, Surry opened up several casks (after much shorter periods of storage) because of seal failures. The condition of the fuel was found acceptable in these cases. With regard to the storage casks themselves, the main technical concerns include the possible failure of cask materials in inaccessible locations over long periods of time, and the ability to observe those in a timely fashion on a system that has no active maintenance in place. Some materials of construction, such as polymer-shielding materials used in storage casks at Surry, are difficult to assess with respect to their long-term integrity in storage service. There have been no formal aging-management programs for dry cask storage in place before this license-renewal application.

With regard to the exemption request and circumstances at the Surry station, there is no clear “uniqueness” to Surry’s situation. Currently, all operational ISFSIs are dependent on the availability of a final repository for the ultimate disposition of spent fuel, and on the U.S. Department of Energy’s schedule for taking the spent fuel from each reactor.

In addition to the 20-year license term specified for site-specific ISFSI licenses (e.g., Surry and H.B. Robinson), certificates of compliance for dry-cask storage systems used under the general license provisions of Part 72 also have a 20-year term. Accordingly, any decision regarding granting or denying the Surry exemption request would have implications for the appropriate term for renewal of a certificate of compliance. Furthermore, any reconsideration of the license renewal term should also consider the duration of the initial license term.

OPTIONS:

The staff developed the following four options concerning the exemption request for a 20-year renewal period. The staff has also identified a range of implications of each of these four options.

Option 1: Deny Surry the 40-year exemption request.

Denying the 40-year exemption request would be consistent with the current policy of issuing Part 72 licenses and certificates of compliance for 20 years. This would support the concept that dry-cask storage in accordance with Part 72 is short-term and interim, dependent on the availability of a final repository for the ultimate disposition of spent fuel. This option would not preclude licensees from requesting another 20-year renewal in the future. This option would also enable the staff to verify, at a 20-year interval, that no degradation of materials is taking place and that the Surry aging management program continues to maintain the current licensing basis.

Denying the 40-year exemption request would mean that, if the spent fuel at the ISFSI has not been removed from the site within 20 years, the licensee would have to submit another renewal

application. The staff notes that the fuel is not guaranteed to be removed from the site even in 40 years.

Option 2: Deny Surry the 40-year exemption request, and initiate a program to review the technical basis for a future rulemaking to revise the license period.

This option is consistent with the current licensing policy of a 20-year term for Part 72 licenses for interim storage. After issuance of the Surry and H.B. Robinson renewed ISFSI licenses, the staff would evaluate the technical basis and implications of the 20-year license and license-renewal periods. This would allow the staff to formally interact with stakeholders including the industry and the public on the issue of license term for short term storage. The staff would evaluate the lessons learned in the conduct of the first two ISFSI license renewals, and determine whether these lessons learned can be applied to Part 72 certificates of compliance. The staff would provide a recommendation to the Commission regarding the merits of a Part 72 rulemaking to establish an appropriate performance based ISFSI license period, ISFSI license renewal period, certificate of compliance period, and certificate of compliance renewal period, which potentially could be different than 20 years.

This option would not allow the ISFSI to have a 40-year renewal period as requested but, should the outcome of a potential rulemaking be a different renewal period, the licensee could apply to amend its license to obtain the benefits of the rule. Following Surry and H.B. Robinson ISFSI license renewals, the staff anticipates Oconee will apply for renewal in 2008. The next ISFSI after Oconee would be Fort Saint Vrain in 2009. This option could be perceived as changing the definition of short term or interim storage if the renewal period is extended, and could undermine public's confidence in the availability of a final repository for the ultimate disposition of spent fuel.

Option 3: Grant Surry a 40-year license-renewal period with appropriate license conditions to manage aging.

This option shows confidence in dry-cask storage technology for longer term interim storage, affords Surry a 40-year license-renewal period, and likely avoids a second renewal application after 20 years. Due to the static condition of ISFSI operation and the passive nature of cask maintenance, the staff feels it would be prudent to make certain maintenance activities license conditions were the renewal period extended beyond 20 years. The staff would propose periodic inspections of areas not visible or readily accessible, verification of adequate aging management, and radiation monitoring activities to verify the effectiveness of the polymer neutron shield materials. In light of the renewal of the Surry operating licenses, this option would recognize the need for continued interim spent fuel storage capability, to support extended plant operation.

The technical data to support the decision to grant the exemption and develop appropriate license conditions is limited. In addition, this option could portray a view that ISFSIs are intended for more extended interim storage, and could undermine public's confidence in the availability of a final repository for the ultimate disposition of spent fuel. In addition, it is likely that all licensees and Part 72 certificate holders will ask for similar exemptions.

Option 4: Grant Surry a 40-year license-renewal period with appropriate license conditions to manage aging, and initiate a program to review the technical basis for a future rulemaking.

This option provides Surry with a 40-year ISFSI license-renewal period and also allows the staff to interact with both the industry and the public on the issue of the appropriate performance based license term for interim storage. It acknowledges the likely need for licensees to continue to store some spent fuel on site beyond the current 20-year ISFSI license period. In granting the exemption, the staff would include certain maintenance activities as license conditions. The staff would propose periodic inspections of areas not visible or readily accessible, verification of adequate aging management, and radiation monitoring activities to verify the effectiveness of the polymer neutron shield materials.

After issuance of the Surry and H.B. Robinson renewed ISFSI licenses, the staff would evaluate the technical basis and implications of the 20-year license and license-renewal periods. The staff would also evaluate the lessons learned in the conduct of the first two ISFSI license renewals, and determine whether these lessons learned can be applied to Part 72 certificates of compliance. The staff would provide a recommendation to the Commission regarding the merits of a Part 72 rulemaking to establish an appropriate performance based ISFSI license period, ISFSI license renewal period, certificate of compliance period, and certificate of compliance renewal period, which potentially could be different than 20 years.

This option could be perceived as changing the definition of short term or interim storage, and could undermine public's confidence in the availability of a final repository for the ultimate disposition of spent fuel.

RECOMMENDATION:

The staff recommends that the Commission approve Option 4, the option to grant Surry a 40-year ISFSI license-renewal period with appropriate license conditions to manage aging, and initiate a program to review the technical basis for future rulemaking. In addition, the staff would apply the Commission approved guidance regarding the disposition of the Surry exemption to the H.B. Robinson exemption, without additional Commission approval.

RESOURCES:

The resource implications of the above options are summarized below. We will evaluate and provide any additional resources needed to support the Commission's policy decision through the Planning, Budgeting, and Performance Management process.

- Option 1: No additional resource implications.
- Option 2: No additional resource implications to grant the 20-year license-renewal period. An estimated 0.25 full time equivalent (FTE) total, would be saved by not processing additional license renewal exemption requests. It is estimated that an additional 0.5 FTE would be needed to initially

evaluate the technical basis for a performance based license period and to provide a recommendation regarding the initiation of proposed rulemaking. These resources are not budgeted. These resources would come from existing resources budgeted for spent fuel licensing activities, and would be expended in FY 2005. Resources needed for any proposed rulemaking are not budgeted and would be identified at a later stage.

Option 3: Additional resources estimated at 0.25 FTE would be needed to develop and refine the appropriate license conditions and interact with the two existing applicants to reach resolution on the current applications. These resources would come from existing resources budgeted for licensing activities, and would be expended in FY 2005. Additional resources, estimated at 0.25 FTE would be expended processing additional exemption requests. These resources are not budgeted.

Option 4: Additional resources initially estimated at 0.75 FTE, by combining resources estimated for Options 2 and 3, above. These resources would come from existing resources budgeted for spent fuel licensing activities, and would be expended in FY 2005. An additional 0.25 FTE could be expended if additional exemption requests were received while the proposed rulemaking effort was ongoing. Resources needed for any proposed rulemaking are not budgeted and would be identified at a later stage.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objections. The Office of the Chief Financial Officer has also reviewed this paper for resource implications and has no objections.

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Option 3: Additional resources estimated at 0.25 FTE would be needed to develop and refine the appropriate license conditions and interact with the two existing applicants to reach resolution on the current applications. These resources would come from existing resources budgeted for licensing activities, and would be expended in FY 2005. Additional resources, estimated at 0.25 FTE would be expended processing additional exemption requests. These resources are not budgeted.

Option 4: Additional resources initially estimated at 0.75 FTE, by combining resources estimated for Options 2 and 3, above. These resources would come from existing resources budgeted for spent fuel licensing activities, and would be expended in FY 2005. An additional 0.25 FTE could be expended if additional exemption requests were received while the proposed rulemaking effort was ongoing. Resources needed for any proposed rulemaking are not budgeted and would be identified at a later stage.

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*See Previous Concurrence

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