PRELIMINARY GUIDANCE FOR LICENSE RENEWAL FOR SITE-SPECIFIC INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS (ISFSIs)

I. PHILOSOPHY

The license renewal application and review processes for ISFSIs are intended to establish and confirm that the systems, structures and components (SSCs) of the ISFSI can, with reasonable assurance, continue to function in a safe manner and meet applicable regulatory requirements for the renewal period. Thus, an application should establish the necessary basis to enable the Nuclear Regulatory Commission (NRC) staff to make a finding that the effects of aging on dry cask storage SSCs are understood and will be managed such that the ISFSI can be operated during the renewal period without undue risk to the health and safety of the public. License renewal is not an exercise in re-licensing and is not intended to impose requirements beyond those that were met by the facility when it was initially licensed by the NRC. Therefore, the current licensing basis (CLB) for the ISFSI will be carried forward through the renewal period. The renewal period for a Part 72 license shall not exceed 20 years, unless a specific exemption is requested and granted by the staff.

This document is intended to serve as preliminary guidance for use by NRC staff in the review of license renewal applications for spent fuel dry cask storage facilities holding a site-specific license under 10 CFR Part 72. It also aims to assist potential applicants in identifying the primary elements to be included in a renewal application. This guidance is not intended to be used for the review of other Part 72 renewal applications, such as for wet storage facilities or general licenses. This guidance is under development and will be revised as more experience is gained in reviewing license renewal applications for ISFSIs.

II. ITEMS FOR EVALUATION IN RENEWAL APPLICATIONS

The applicant should consider, at a minimum, the following items in the preparation of an application: (1) the intended functions of the SSCs of the ISFSI; (2) aging effects for specific SSCs; (3) existing maintenance and monitoring programs and proposed modifications thereto; (4) significant environmental changes; (5) realized and predicted changes in site-specific characteristics; (6) operational experience at this ISFSI and at others with similar cask designs; and (7) realized and projected decreases in thermal loading and source term for loaded casks.

III. CONTENTS OF APPLICATION FOR SITE SPECIFIC LICENSE RENEWAL

Section 72.42 of 10 CFR Part 72 lists the requirements that a licensee must meet for renewal of an ISFSI license. A licensee should file an application for renewal in accordance with the applicable provisions of Subpart B, “License Application, Form, and Contents,” at least 2 years prior to the expiration of the existing license. Information contained in previous applications, statements, or reports filed with the Commission under the license may be incorporated by reference, provided that such references are clear and specific. The following application content has been determined to meet the requirements of Section 72.42.

A. General Information
B. Scoping Evaluation
C. Aging Management Reviews
D. Aging Management Maintenance or Surveillance Programs

E. Time-Limited Aging Analyses (TLAAs)
F. Final Safety Analysis Report (FSAR) Supplement
G. Technical Specifications Changes or Additions
H. Environmental Report Supplement
I. Additional Information

More detail for each application content item is provided in the following sections.

A. General Information

The general information required by 10 CFR 72.22 should be updated and submitted in a renewal application as appropriate, or clear references to existing CLB information should be provided.

Review Guidance: The staff review should verify that information and/or references are adequate and appropriate.

B. Scoping Evaluation

The SSCs that comprise an ISFSI, (for example, one that uses metal dry storage casks or concrete shielded storage systems), may fall into one of the categories listed below. Such SSCs are within the scope of license renewal. The categories of SSCs are those that are:

1. Important to safety, as they are relied upon to: (a) maintain the conditions required to store spent fuel safely, (b) prevent damage to the spent fuel during handling and storage, or (c) provide reasonable assurance that spent fuel can be received, handled, packaged, stored, and retrieved without undue risk to the health and safety of the public, as identified in the CLB. These SSCs ensure that important safety functions are met for: (1) criticality, (2) shielding, (3) confinement, (4) heat transfer, and (5) structural integrity.

2. Classified as not important to safety, but, according to the CLB, whose failure could prevent an important to safety function from being fulfilled or whose failure as a support SSC could prevent an important to safety function from being fulfilled.

The function performed by a SSC that causes it to be within the scope of license renewal is its intended function.

Additional guidance describing SSCs that may be included within the scope of license renewal is provided in NUREG/CR-6407, “Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety,” February 1996. Section 3, pages 4-6, defines the classification categories and Section 6, pages 34-45, discusses the classification of storage components. Note that the CLB at individual ISFSIs may provide for classifications of SSCs that differ from those in NUREG/CR-6407. For some casks, the classification of SSCs should be based on the NRC-approved Topical Safety Analysis Reports (TSARs) from the individual cask vendors, or on a site-specific SAR for a given ISFSI.

A SSC may be eliminated from the scope of license renewal, provided it does not fall into either of the above categories and the applicant has determined that it may be excluded from the

renewal scope based on plant-specific experience with the design, industry-wide operating experience (if appropriate), and/or existing engineering evaluations.

Also, SSCs which perform ISFSI support functions are generally not within the scope of license renewal. The following support SSCs may be eliminated from the scope, provided they do not meet scoping category 2, above:

(1) Equipment associated with cask loading and unloading, such as: (a) welding and sealing equipment; (b) lifting rigs, slings, etc.; (c) vacuum drying equipment; (d) transporter devices; (e) portable radiation survey equipment; and (f) other tools, fittings, hoses, gauges, etc., associated with cask loading and unloading;

(2) SSCs associated with physical protection of the ISFSI pursuant to 10 CFR Part 72 Subpart H;

(3) SSCs associated with the ISFSI Emergency Plan pursuant to 10 CFR 72.32; and

(4) Miscellaneous hardware that does not support or perform any important to safety function.

The fuel in storage is considered to be within the scope of license renewal. The effects of aging of fuel shall be evaluated.

The application should provide documentation of the scoping process that includes:

(1) a description of the scoping process and rationale for the inclusion of SSCs in the renewal scope;

(2) a listing of the SSCs that are included within the scope of license renewal, their intended function, and safety classification or basis for inclusion in the renewal scope;

(3) a list of the sources of information used (see list below for examples); and

(4) any discussion needed to clarify the process, SSC designations, or sources of information used.

The appendix to this document provides a sample of SSC listings for an approved cask design, including information that will facilitate the aging management review discussed in the following section. This type of information should be included in a typical application for renewal. Applicants should review the cask vendor's Topical Safety Analysis Report (TSAR) for each cask design, and other documents, as appropriate, in developing the list of SSCs for their facility. Note that only those SSCs that are in the scope of license renewal require aging management reviews.

Review Guidance: The staff review should determine whether the applicant's screening included all necessary SSCs and whether it was consistent with the above information. Generally, the applicant's summary of the screening process should be sufficient for the staff to review, provided it contains enough detail for the staff to make a finding in this area.

LIST OF POTENTIAL INFORMATION SOURCES:

Safety Analysis Reports, including SARs, FSARs, UFSARs, and TSARs
Technical Specifications
Operating Procedures
Regulatory Compliance Reports, including Safety Evaluation Reports
Design Basis Documents
System/Facility Drawings
Quality Assurance Plan or Program
Docketed Correspondence
Operating Experience Reports
10 CFR 72.48 Evaluations
Vendor Information

C. Aging Management Reviews

The purpose of the aging management reviews (AMRs) is to assess the in-scope SSCs (identified as discussed above) with respect to aging effects that could affect the ability of the SSC to perform its intended function during the renewal period. Such SSCs may be addressed by evaluation to demonstrate that aging effects will not compromise the SSCs' intended function during the renewal period, or by aging management programs such as monitoring, repair, or periodic replacement that will be maintained or established for the renewal period. AMRs will provide the basis for the technical information that must be provided in the application.

The applicant shall identify aging effects requiring management for SSCs within the scope of the license renewal. The following table lists aging mechanisms and effects and is an excerpt from a table in Appendix C to NUREG-1557, "Summary of Technical Information and Agreements from Nuclear Management and Resources Council Industry Reports Addressing License Renewal" (Oct. 1996).

AGING MECHANISMS AND EFFECTS	
Aging Mechanism	***Aging Effects***
SSCs in Outside Environment Concrete Structures	
1. Freeze-Thaw	Scaling, cracking, and spalling
2. Leaching of Calcium Hydroxide	Increase in porosity and permeability
3. Aggressive Chemical Attack	Increase in porosity and permeability, cracking, and spalling
4. Reaction with Aggregates	Expansion and cracking
5. Elevated Temperature	Loss of strength and modulus
6. Irradiation of Concrete	Loss of strength and modulus
7. Creep	Deformation
8. Shrinkage	Cracking

9. Corrosion	Loss of material
10. Abrasion and Cavitation	Loss of material
11. Restrain, Shrinkage, Creep and Aggressive Environment	Cracking
12. Concrete Interaction with Aluminum	Loss of strength
13. Cathodic Protection Current	Cathodic protection effect on bond strength
Structural Steel and Stainless Steel	
1. Corrosion, Local or Atmospheric	Loss of material
2. Elevated Temperature	Loss of strength and modulus
3. Irradiation	Loss of fracture toughness
4. Stress Corrosion Cracking	Crack initiation and growth
Reinforcing Steel (Rebar)	
1. Corrosion of Embedded Steel	Cracking, spalling, loss of bond and material
2. Elevated Temperature	Loss of strength and modulus
3. Irradiation	Loss of strength and modulus
Miscellaneous	
1. Settlement	Cracking, distortion, increase in component stress level
2. Strain Aging (of Carbon Steel)	Loss of fracture toughness
3. Loss of Prestress	Reduction in design margin
4. Corrosion of Steel Piles	Loss of material
5. Corrosion of Tendons	Loss of material
Cask Internals	
1. Corrosion, Boric Acid Corrosion	Loss of material
2. Creep	Change in dimension
3. Erosion/Corrosion	Wall thinning
4. Stress Corrosion Cracking (includes intergranular, transgranular, and irradiation assisted)	Crack initiation and growth
5. Neutron Irradiation Embrittlement	Loss of fracture toughness
6. Stress Relaxation	Loss of preload
7. Thermal Embrittlement	Loss of fracture toughness
8. Wear	Attrition

Of the mechanisms and effects listed, the effects most likely to occur for fuel that has been confined in an inert dry storage environment for a period of time are as follows:

Creep of fuel cladding;
Stress corrosion cracking (SCC) of stainless steel (SS) canister welds;
Radiation damage, such as embrittlement;
Corrosion of metal surfaces exposed to the environment, such as unprotected carbon steel and exposed rebar;
Freeze/thaw conditions at sites with extreme temperatures;
Wearing of components like O-rings that have a specific service life;
Electro-chemical corrosion; and
Thermally-induced degradation.

Off-normal events that could have compromised, or could lead to future compromise of, the inert environment of the cask interior, in particular, the potential effect on fuel, should be evaluated on a case-by-case basis.

(This list is not necessarily comprehensive for each renewal application.)

Review Guidance: (See discussion in Section D below)

D. Aging Management Maintenance or Surveillance Programs

For those aging effects identified as applicable during the renewal period, the applicant should identify any existing or new aging management programs that will be maintained throughout the renewal period. Also, the applicant should justify that monitoring or surveillance programs will be effective for the entire renewal period. For example:

For stress corrosion cracking of SS canister welds, corrosion, and concrete weathering, the application should include a description of the inspection and maintenance programs that will be conducted, their frequency, and how they will identify and correct any adverse effects from these aging mechanisms to avoid loss of intended function.

For degradation of canister closure O-ring seals, the application should include a description of the surveillance program used to continually monitor the performance of this component, as well as any associated maintenance program.

Review Guidance (applies to Sections C and D above):

1. <u>General Considerations</u>

The staff review should confirm that the overall license renewal assessment program includes consideration of the following: potential degradation mechanisms, maintenance and operational history at the ISFSI (including industry experience), modifications, root cause determinations, analyses or calculations, and inspections.

The staff should review the applicant's summary of the maintenance history, corrective actions, repairs, modifications, and periodic maintenance programs. The inspection programs for the various components important to safety should be reviewed. Modifications made to in-scope

SSCs, under 10 CFR 72.48 or through license amendment, should be included in the applicant's discussion, to ensure that any impact on the SSC for continued service during the renewal period has been considered.

The licensee's program should emphasize inservice inspection programs developed to identify adverse conditions (such as cracks and corrosion), and the program may be augmented with assessments of specific degradation mechanisms. These mechanisms should be considered for the type of degradation effects that they cause, so that the inspection program can capture relevant damage. For material degradation of consequence to safety, the root cause must be addressed and the applicant must discuss how the current maintenance, corrective action, or other programs control the degradation mechanism or its consequences.

For the applicant's inspection programs, the staff should compare the assessment of potential degradation mechanisms to the specified inspection programs and the conditions detected during the component inspections. The staff should assess how new programs and/or analyses address any previously unidentified conditions that were discovered during the course of the inspections performed in preparation for license renewal.

The applicant's inspection program should justify the number of canisters to receive visual inspection by their removal from the concrete overpack so that selected surfaces of the various components exposed to the ambient air environment are examined, including the bottom. Canisters used in horizontal storage structures must be similarly inspected. In lieu of canister removal from concrete overpacks or similar structures, remote inspection methods may be used.

For components that are not readily inspected (e.g., cask interior), potential degradation mechanisms may be assessed by analysis. Analyses should be submitted for staff review. If previous analyses are still relevant, a reference to that analysis may be cited in lieu of a resubmittal. A discussion justifying extension of the previous analyses through the renewal period must be provided. Lessons learned from the NRC/EPRI cask demonstration program at INEEL should be considered, as appropriate.

2. Attributes of an Effective Aging Management Program:

The scope of the program/activity should include the specific systems, structures and components subject to an aging management review for license renewal.

Preventive actions are in effect that mitigate or prevent the onset of degradation or aging effects, and their effectiveness is periodically verified.

Parameters are monitored, inspected, and/or tested, that provide direct information about the relevant aging effect(s), and their impact on intended functions.

The aging effects are detected by one or more of the credited programs before there is a loss of the structure's or component's intended function.

Monitoring and trending provides an adequate predictability and allows for timely corrective or mitigative actions.

The program contains acceptance criteria against which the need for corrective action will be evaluated, and ensures that timely corrective action will be taken when these acceptance criteria are not met.

Corrective actions are taken (this includes root cause determinations and prevention of recurrence where appropriate) in a timely manner or an alternative action is identified.

There is a confirmation process that ensures that the corrective action was taken and was effective.

The program is subject to administrative controls.

Operating experience of the program/activity, including past corrective actions resulting in program enhancements, should be considered. It provides objective evidence that the effects of aging have and will continue to be adequately managed.

NOTE: Not all attributes are applicable to all programs.

3. Materials Considerations

The following regulatory requirements apply to all Part 72 licenses, but are highlighted here for particular emphasis for the review of a license renewal application:

> The materials used for shielding and criticality functions shall be adequate for performance of intended functions. [10 CFR 72.104(a), 72.106(b), 72.124, 72.128(a)(2)]
>
> The materials of construction shall have adequate properties for anticipated service and environmental conditions, and quality standards shall be used to verify that the design bases for the SSCs are satisfied. [10 CFR 72.122(a), (b) and (c)]
>
> The DCSS must be designed to store spent fuel safely for a minimum of 20 years and permit maintenance as required. [10 CFR 72.236(g)] (Note: in the case of a renewal application, the requested renewal period may be less than 20 years)
>
> The DCSS must reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions. [10 CFR 72.236(l)]
>
> The cask, and cask components, must be compatible with wet or dry spent fuel loading and unloading facilities. [10 CFR 72.236(h)]
>
> The spent fuel cladding must be protected from degradation which could lead to gross rupture and pose operational safety problems with respect to spent fuel retrievability. [10 CFR 72.122(h)(1)]
>
> In the design of the DCSS, consideration should be given to removal of the spent fuel from a reactor site, transportation, and ultimate disposition by the Department of Energy. [10 CFR 72.236(m)]

4. Analyses and Inspections of Materials Properties and Condition of Components.

The review of a dry cask storage system (DCSS) for license renewal must ensure that materials performance during the license renewal period will be adequate to meet the requirements of the license renewal period. The materials specified in the original SAR were selected to be adequate for the initial license duration. The materials properties specified in the original design are properties that may have been significantly altered during the initial licensing period. A list of components should be developed which tabulates any safety significant property alteration that may have occurred during the first licensing period. The materials analyses for license renewal should ensure that each component will have adequate properties for meeting the extended service.

The service requirements for a component are given in the SAR for each DCSS. Therefore, the materials analyses for license renewal shall list all components and the pertinent properties for the DCSS along with any alterations due to service conditions in the first licensing period. Components important to safety in each of the following categories should be considered: containment, criticality control, shielding, heat transfer, structural integrity, and operations support. The analyses shall assess the safety significance of any alterations due to service conditions in the first licensing period. The analyses of safety significant effects should take into account the cumulative effects of thermal and radiation loading, and materials degradation.

The information needed for assessment of significant alterations of materials during the first licensing period can be obtained from the combination of the following two approaches:

A. Inspections, including all non-intrusive inspections that can be made to verify performance and current condition of components after the first licensing period, shall be done, to the extent practical. Reports shall include discussion and evaluation of any damage detected and observable degradation, which may have safety significance for the DCSS.

B. Where inspections are not possible, analyses will be presented. Analyses are generally reserved for the components of the system that are not readily inspected. For example, it may not be possible to inspect for corrosion on all parts of a DCSS exterior, whereas analyses of the water permeation resistance of concrete might be employed to draw conclusions as to the condition of imbedded reinforcing steel. Such an analysis considers the original design requirements and the materials performance and potential for degradation under the design conditions. The most significant impacts on materials performance are likely to result from the additional exposure to weathering or local environments and from the heat and radiation “loads” to be encountered during the renewal period. The heat and radiation “loads” are decreasing over time and, after 20 years, are considerably less than that those present at the time of initial cask loading. In contrast, the weathering mechanisms are likely to remain relatively constant over time. During any storage period, the DCSS must meet the requirements of 10 CFR 72.

5. Storage Pad

For storage pads considered important to safety, the staff should review the applicant’s assessment that common aging effects or potentially deleterious conditions in concrete have been considered in the inspection program, including:

* cracks

* settling

* spalling

* ponding of water

* exposure/corrosion of rebar or other imbedded items

The staff should review the applicant's summary and evaluation of the repair and maintenance history of the concrete pad. This summary should include a discussion of whether crack sealants or concrete surface coatings are in use to manage aging effects and should outline programs for their maintenance.

The staff should review the applicant's synopses of the root cause evaluations of repairs and evaluations in support of modifications. The application should include an assessment of whether the various maintenance activities and repairs were due to:

random events that are not reasonably expected to reoccur; or

anticipated, ongoing conditions such as freeze-thaw cycles.

The staff should confirm that the applicant's programs to identify and mitigate degradation to the concrete and associated coatings/sealants are appropriately specified or referenced in the plant maintenance and/or operating procedures. A synopsis of each cited program should be provided in the application.

The staff should assess the suitability of any new or proposed programs created as a result of newly identified conditions or degradation mechanisms.

6. Concrete overpack/horizontal storage structure (where present)

The staff should review the applicant's inspection program of the concrete overpack. This program should include the inspection of the interior of at least one overpack for each cask type under consideration for license renewal. This inspection could include the removal of the storage cask from the overpack to obtain access to the overpack interior, or use of a suitable remote inspection method. The applicant may incorporate lessons learned from generic validation programs, such as the INEEL cask performance program.

For each cask type considered for license renewal, a radiation survey should be performed. The results of this survey should be compared to similar initial service radiation field measurements, if available. The applicant should evaluate the performance of the cask system, and any deviations from calculated values that could be indicative of degradation in the shielding effectiveness should be addressed. This assessment is primarily directed at polymeric neutron shield materials, since the organic resins incorporated in these materials are subject to thermal and radiation induced degradation. Corrective actions should be discussed in detail.

The staff should review the following information to be provided by the applicant:

(1) Assessments of degradation mechanisms, based on inspections, or analyses of degradation mechanisms/conditions that cannot be directly inspected.

(2) Synopses of programs specified or referenced in the plant maintenance or operating procedures to identify and mitigate degradation of the overpack components.

(3) Descriptions of the maintenance/operation/inspection programs, to verify that they adequately address the following:

(a) The condition of air vent screens and attaching frames/hardware. They should be in place, uncorroded, undamaged, and unblocked.

(b) The condition of instrumentation and cables/conduit. They should be properly affixed, undamaged, water tight or otherwise able to exclude rain water.

(c) Cask identification. It should be present, permanently affixed, and legible.

(d) The condition of the cask pedestal (if present).

(4) Description of the inspection program, to ensure that it adequately addresses aging effects or potentially deleterious conditions in the overpack, including:

* cracks

* spalling

* exposure of reinforcement materials

* condition of imbeds

(5) Summary of repair and maintenance history for all the overpacks.

(6) Tabulation of crack sealants or concrete or metal component surface coatings in use and programs for their maintenance.

(7) Root cause evaluations for repairs (or modifications), including an assessment of whether the various maintenance activities and repairs were due to:

(a) routine maintenance of limited-life components such as sealants and coatings;

(b) one-time events that are not reasonably expected to reoccur; or

(c) ongoing conditions such as freeze-thaw cycles.

The staff should assess the suitability of any new, proposed programs created as a result of newly identified conditions or degradation mechanisms.

7. Cask Exterior

Inspection/evaluation of a cask exterior will vary depending upon whether the design employs a separate overpack/horizontal storage structure or is self-contained. Inspections may vary, but the general inspection and evaluation goals are the same: ascertain the cask condition for continued use under present and proposed programs.

The staff should review the following information to be provided by the applicant:

(a) results of neutron radiation surveys performed for all cask types incorporating polymeric neutron shields. A sampling of casks may be compared to historical radiation field surveys. Any indications of a decline in the neutron shielding effectiveness should be analyzed and addressed. Corrective actions should be discussed in detail.

(b) assessment of degradation mechanisms.

(c) cited or new analyses for mechanisms/conditions that cannot be directly inspected.

(d) programs specified/referenced in the plant maintenance/operating procedures to identify and mitigate degradation of the cask system components. The applicant should individually address each cited program.

(e) a summary of the maintenance and inspection history for all the subject casks. The inspections (either routine or one-time for renewal) should include, but not be limited to, examining for:

(i) cracked welds

(ii) corrosion/pitting on all exposed surfaces

(iii) age and condition of coatings

(iv) corroded, cracked, missing fasteners

(v) rust bleed from underneath cask

(vi) water accumulations (ponding) on cask surfaces

The root cause evaluations for repairs (or modifications) should be reviewed, including an assessment of whether the various maintenance activities and repairs were due to:

(a) routine maintenance of limited-life components, such as elastomeric o-ring seals and coatings;

(b) random or one-time events that are not reasonably expected to reoccur; or

(c) ongoing conditions such as freeze-thaw cycles

The staff should assess the suitability of the applicant's existing or planned programs developed in response to identified conditions or degradation mechanisms, and should confirm

that these programs ensure, for example, that instrumentation and cables/conduit are properly affixed, undamaged, water tight or otherwise able to exclude rain water; and cask identification is present, permanently affixed, and legible.

8. Cask Interior

The cask interior can only be reasonably assessed by analyses. Use of previous information gained from casks of like construction, operating conditions, etc., that have been previously opened and examined should be included in the evaluation. The staff should review the applicant's assessments of the cask interior, which should include the following, at a minimum:

(i) a discussion and assessment of potential degradation mechanisms (storage only, not including accident conditions);

(ii) a description of pressure monitoring system, where present, and history of monitoring record;

(iii) a history of seal performance and assessment of anticipated performance for next license period;

(iv) a table of fuel parameters, including years cooled before loading, type, condition, etc. The staff should review the applicant's analyses of significant differences in internal conditions between otherwise identical casks, such as differences in thermal loading (past and present Kw load), initial temperatures, current temperatures, and dates; and

(v) an assessment of changes in cladding creep life methodology, based upon current staff guidance regarding acceptable method(s).

E. Time Limited Aging Analyses (TLAAs)

TLAAs provide the analytical or calculated basis to justify a specified performance life for SSCs. This concept has been used in license renewal for operating nuclear power plants and may also apply, to a limited extent, to the renewal of ISFSI licenses. The applicant should review TLAAs for SSCs with predetermined life spans and provide a justification and basis for dispositioning each one. TLAA technical information provided in the submittal should be based on the following discussion.

TLAAs for license renewal are defined to be based on the current operating term of the ISFSI. The applicant must identify ISFSI-specific TLAAs by applying the six criteria described below. All six criteria must be satisfied to conclude that a calculation or analysis is a TLAA that must be addressed in the application for license renewal.

(1) The TLAA must already be contained or incorporated by reference in the current licensing basis (CLB) for the ISFSI. Plant-specific documentation contained or incorporated by reference in the CLB includes SARs, SERs, Technical Specifications, fire protection plan/hazards analyses, correspondence to and from the NRC, QA plan, and topical reports included as references in the SAR. Calculations and analyses that are not in the CLB or not incorporated by reference are not TLAAs.

(2) The TLAA must address SSCs within the scope of license renewal as defined in Section B above.

(3) The TLAA must consider the effects of aging of materials as discussed in Sections C and D above.

(4) The TLAA must involve time-limited assumptions defined by the current operating term, for example 20 years. The defined operating term should be explicit in the analyses. Simply asserting that the SSC is designed for a service life or ISFSI life is not sufficient. The assertions must be supported by a calculation, analyses, or testing that explicitly include a time limit.

(5) The TLAA must be pertinent to a specific safety determination that exists in the CLB. Such analyses would have initially provided the basis for the applicant's initial safety determination, and without the analyses, the applicant may have reached a different safety conclusion.

(6) The TLAA must provide conclusions or a basis for conclusions regarding the capability of the SSC to perform its intended function. Analyses that do not affect the intended functions of the SSCs are not considered TLAAs.

Review Guidance:

The staff should confirm that the applicant has dispositioned each identified ISFSI-specific TLAA using one of three different approaches described below:

(1) Verify that the existing TLAAs are applicable through the renewal period.

Existing TLAAs are typically based on the current operating term of 20 years. However, the applicant may take credit for or reference more recent performance data or analyses that are available from vendors or other sources that can demonstrate that the existing analyses remain valid for the renewal period and that no additional analyses are required.

The following is an acceptable approach for verifying that existing CLB TLAAs remain valid. The TLAA for renewal should describe the objectives of the analyses, conditions and assumptions used in the analyses, acceptance criteria, relevant aging effects, and intended functions of the SSCs. It should also demonstrate that: (1) the conditions and assumptions used in the analyses already address the relevant aging effects for the renewal period, and (2) acceptance criteria are maintained to provide reasonable assurance that the intended functions are maintained.

(2) Justify projection of existing TLAAs to the end of the renewal period.

The current TLAAs may not be valid for the renewal period, however, it may be possible to revise the existing analyses by re-evaluating conservative conditions and assumptions. Examples include consideration of decreased exposure and loading (radiation and thermal) over the renewal period, the alteration of a very conservative assumption in the original analyses, the use of new or refined analytical techniques, and/or providing new analyses based on the requested renewal period. The TLAA may then be shown to be valid for the renewal period.

(3) Verify that the TLAAs are managed by existing or new aging management program(s). SSCs associated with the TLAAs should be identified. The TLAA for renewal should describe: (1) the objectives of the analyses, (2) the conditions and assumptions used, (3) acceptance criteria, (4) relevant aging effects, (5) intended functions of the SSCs, and (6) existing or additional aging management programs that will be implemented during the renewal period to address the potential aging effects. Attributes comprising an adequate and comprehensive aging management program are described in Section D above.

F. Final Safety Analysis Report (FSAR) Supplement

The FSAR supplement for the facility must contain a summary description of the programs and activities relied upon to manage the effects of aging and the evaluation of TLAAs for the renewal period.

Review Guidance: The staff should verify that updates and additions to the FSAR are consistent with aging management and TLAA programs.

G. Technical Specification Changes or Additions

The application should also include any proposed technical specification (TS) changes or additions that are necessary to manage the effects of aging during the renewal period and should comply with the applicable requirements of 10 CFR 72.44. It should also include a summary statement of the bases and the justification for the changes or additions. Generally, any TS changes that are not relevant to license renewal should be treated as separate licensing actions.

H. Environmental Report Supplement

As required by 10 CFR 51.60, an applicant for renewal of a license for storage of spent fuel in an ISFSI shall submit a supplemental Environmental Report. This supplemental report may be limited to incorporating by reference, updating, or supplementing the information previously submitted to reflect any significant environmental change, including those that may result from operating experience, a change in operations or proposed decommissioning activities. However, 10 CFR 51.45(c) specifies that the environmental report should contain sufficient data to aid the Commission in its development of an independent analysis. Therefore, the applicant should demonstrate that it has considered any significant changes that occurred during the initial license period and any changes anticipated to occur during the proposed renewal period.

Review Guidance: The staff should review the original environmental report and determine if the updated information would change any of the original NRC conclusions related to the requirements of 10 CFR Part 51.

I. Additional information

The applicant should provide clear and specific references to relevant CLB information that addresses the other requirements of Part 72 Subpart B, including training and qualifications (72.28), financial assurance and decommissioning (72.30), and emergency planning (72.32). The scope of staff review of this information should be limited to only those changes related to the proposed license renewal.

Review Guidance: The staff should review the original staff SER for the referenced subjects and verify that any licensee updates do not affect previous staff findings.

IX. REFERENCES

10 CFR Part 72
NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," March 2000
Draft Regulatory Guide DG-1104, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," August 2000
Regulatory Guide 3.50, "Standard Format and Content for a License Application to Store Spent Fuel and High-level Radioactive Waste," Revision 1, September 1989

APPENDIX

The following is an example of an ISFSI cask materials and components list completed for the TN-68 Cask as reflected in the cask Safety Analysis Report. Other data sheets will be added for additional cask designs in a future revision of this document. Such data sheets should be updated as part of an application for ISFSI license renewal and used for identifying SSCs that are in the scope of license renewal.