APPENDIX A – EXAMPLES FOR INDIVIDUAL GUIDANCE SUBSECTIONS

EXAMPLES OF PROCESSING OF COC HOLDER AND LICENSEE-INITIATED ACTIVITIES (NEI 2.1.5.1 AND 2.1.5.3)[1]

The examples below demonstrate three different types of interaction between general licensees and CoC holders related to 72.48 activities implemented by either the CoC holder or the licensee.

Example 1

The CoC holder makes a modification to reduce the thickness of the neutron absorber in the spent fuel canister basket. The areal density of the Boron-10 in the neutron absorber is not altered and the CoC is not affected. Canister drawings and the cask UFSAR text are revised to reflect the modification. All canisters fabricated after the date of implementation will contain the thinner neutron absorber. General licensees using that cask system review this modification against their 72.212 Report for impact. Those general licensees that will use the modified canisters and have determined that there is no impact on their 212 Report or procedures have no further action. No 72.48 screening or evaluation is required by the licensee. Those that determine a revision to the 212 Report is required will process that revision and perform any reviews under 72.48 that the process determines are necessary.

Comment [NRC1]: Revise this example to elaborate on the important considerations that would be involved in such a change. For example, evaluation of whether or not the proposed change is within the bounds of the existing criticality analysis and code validation provided in the UFSAR. Conclusions to this example may need to be changed accordingly.

Example 2

The CoC holder makes a modification under 72.48 that reduces the outer diameter of the storage cask and reduces the thickness of the concrete between the stored fuel and the environment. This reduced concrete thickness decreases the weight of the cask and slightly increases the direct radiation dose from the side of the cask. Those general licensees that intend to use the modified casks determine that there is an impact on their 212 Report in the sections describing the ISFSI pad design and the dose analysis performed to demonstrate compliance with 10 CFR 72.104. These general licensees must evaluate the modification to the 212 Report under 10 CFR 72.48. The licensee's 72.48 screening/evaluation focuses solely on the impact on the 212 Report and supporting evaluations. It does not repeat the generic 72.48 screening or evaluation performed by the CoC holder (the design authority) to determine if prior NRC review is required based on the impact of the modification on the generic cask UFSAR.

Example 3

Comment [NRC2]: Explain how this example illustrates the guidance in Sections 2.1.5.1 and 2.1.5.3.

The cask UFSAR operating procedures require the installation of a specific type of temporary shielding on the top of the canister and above the canister-to-transfer cask annulus during canister welding activities. A general licensee has devised an alternate

[1] Refers to NEI 12-04 throughout this appendix.

approach of providing the necessary shielding by attaching the shielding to the bottom of the automatic welding machine. The general licensee must review the modification to the cask loading procedures and 212 Report, if affected, under 10 CFR 72.48 and identify this deviation from the cask UFSAR operating procedures in the 72.212 Report. Site- specific deviations from the cask UFSAR are controlled by the general licensee in any manner that ensures retrievability and availability of the deviations to any person implementing cask UFSAR modifications or deviations pertaining to that ISFSI in the future.

Comment [NRC3]: Instead of using the word "deviation," use a term that is consistent with 72.48

EXAMPLES OF OTHER REGULATORY PROCESSES (NEI 2.2.1)

Example 1

A modification to an ISFSI facility or cask design involves revising how the transfer of a loaded spent fuel storage cask from the power plant to the ISFSI will be performed. The modification affects how the transfer is described in the UFSAR, and also affects a specific transfer requirement contained in the cask technical specifications. Thus, a license/CoC amendment to revise the technical specifications under 10 CFR 72.56 (specific licensee) or 72.244 (cask CoC) would be required to implement the revised transfer requirements that are in the technical specifications. 10 CFR 72.48 should be applied to the balance of the modification.

Comment [NRC4]: Revise the last sentence of the example to state: "10 CFR 72.48 could be applied to the balance of the modification, i.e., those changes that do not impact or relate to the technical specification revision."

Example 2

A cask loading procedure section governing an activity taking place in the reactor fuel handling building is proposed to be modified. This activity could require a licensee to apply both 72.48 and another regulation when proposed activities could affect both the 10 CFR Part 50 reactor facility described in the reactor UFSAR and the 10 CFR Part 72 ISFSI facility or cask design described in the ISFSI/cask UFSAR. Another example could be a modification to the cask handling crane. In this case, both a 50.59 and 72.48 screening/evaluation may need to be performed.

Example 3

Comment [NRC5]: Clarify how this example relates to Section 2.2.1 of the guidance. Part 71 CoC revision is not needed to allow a change under Part 72.

A CoC holder modifies a dual-purpose canister design feature that appears on the Part 72 licensing drawings in the cask UFSAR and the canister drawings incorporated by reference into the Part 71 CoC. The CoC holder would need to review the Part 72 modification pursuant to 10 CFR 72.48 and amend the Part 71 CoC to adopt the design as depicted in the later drawing revision.

EXAMPLE OF A NUMERICAL VALUE AS A DESIGN FUNCTION (NEI 3.10)

Example

The shielding analysis for a storage cask or module takes credit for specific thicknesses of steel, concrete, lead, etc. to provide gamma and neutron shielding. These thicknesses

are credited in the shielding analysis to provide a certain reduction in dose rate for a particular source term for the fuel inside the storage canister. This credit is taken for both normal and accident dose analyses. These numerical values therefore, have a design function.

EXAMPLE OF SINGLE AND MULTIPLE APPLICABILITY DETERMINATION PORTALS (NEI 4.8)

Example

A proposed activity involves a modification to the configuration and power supply for the plant security system as described in the security plan. Using the single portal Applicability Determination (AD) model, the activity owner uses the 50.59 AD process to choose the correct regulatory review process(es) for the proposed activity. In this case, 10 CFR 50.54(p) would likely apply and other processes, such as 10 CFR 50.59 and 10 CFR 72.48 may also apply. "Since it will be repaired per 10 CFR Part 72, Subpart G," the activity owner is directed to the procedure or guidance for the applicable review process(es) by the questions on the 50.59 AD form.

In the multiple portal AD model, the 10 CFR 50.54(p) review process might be the primary regulatory review process and would include checks of other review processes, such as 10 CFR 50.59 and 10 CFR 72.48, for applicability. The reviewer is directed to the procedure or guidance for the other applicable review process(es) by the questions on the 50.54(p) AD form, or whichever form has been chosen for use.

EXAMPLES OF 72.48 APPLICABILITY TO COMPENSATORY ACTIONS FOR DEGRADED CONDITIONS (NEI 4.9)

Comment [NRC6]: "Examples of 72.48 Applicability to Compensatory Actions for Degraded Conditions."

NEI appears to be using the guidance document to address out of scope information. Neither Part 71 or 72 address the issue of degraded conditions, unlike Part 50, which does provide licensees with a method for evaluating and continuing to operate a reactor with degraded components.

NEI appears to be suggesting now that Inspection Manual Part 9900 can be used to perform alternate analysis to establish operability/functionality and a 72.48 would not be required as the licensee would enter this into their corrective action program.

The NRC has ever endorsed this document or process for Part 72 activities.

Additionally, the last sentence of Example 1 is incorrect because: 1) the condition described is a nonconforming condition, not a degraded condition and 2) nonconforming conditions are subject to 72.48.

The following examples illustrate the process for implementing a temporary modification as a compensatory action to address a degraded/nonconforming condition:

Example 1

In reviewing cask documentation, a licensee discovers that a loaded cask does not meet the drop analysis and is outside the analyzed space for cask transfer activities. The licensee will perform an alternative analysis (using NRC Inspection Manual Part 9900, Section C.4 guidance) in a timely manner to establish operability/functionality (as appropriate) and leave the cask in place until the new analysis is completed. The degraded condition would not be subject to 10 CFR 72.48 because the licensee would document the degraded condition in their corrective action program.

Example 2

While digging a trench outside of the ISFSI, a licensee accidentally cuts some cask temperature monitoring wires. An interim compensatory measure is implemented to connect a temporary temperature monitoring instrument. The cut wires will be repaired in a timely manner. ~~Since~~Because it will be repaired ~~per~~as required by 10 CFR Part 72, Subpart G, this ~~This~~ degraded condition of cut wires would not be subject to 10 CFR

72.48. The compensatory measure to connect the temporary instrument under a temporary modification would be subject to 10 CFR 72.48 to determine if it has any impact on other aspects of the ISFSI facility or cask.

Example 3

A pressure switch on a canister is found to be defective. It is a redundant switch that is described in the UFSAR but not required by the CoC or Technical Specifications. The licensee determines that the switch is not needed for any safety analyses purposes and chooses to leave the failed switch "as is." This would be a modification to the ISFSI facility or spent fuel storage cask design and subject to 10 CFR 72.48.

EXAMPLES OF SCREENING MODIFICATIONS TO THE ISFSI FACILITY OR CASK DESIGN (NEI 5.1.1, 5.1.2, AND 5.1.3)

The following examples illustrate the 10 CFR 72.48 screening process as applied to proposed ISFSI facility or cask design modification activities:

Example 1

A licensee/certificate holder proposes to replace a globe valve with a ball valve in a vent/drain application that is used in the loading process to reduce the propensity of this valve to leak. The UFSAR-described design function of this valve is to allow the cask to be filled, drained, and vented in the loading process. The vent/drain function of the valve does not relate to design functions credited in the safety analyses, and the licensee has determined that a ball valve is adequate to support the vent/drain function and is superior to the globe valve in terms of its isolation function. Thus the proposed modification affects the design of the existing vent/drain valve, not the design function that supports system performance credited in the safety analyses, and evaluation/reporting to NRC under 10 CFR 72.48 is not required. The screening determination should be documented, and the UFSAR may need to be updated per 10 CFR 72.70 (specific licensee) or 10 CFR 72.248 (cask CoC holder) to reflect the modification. If this modification were being made by a general licensee for a site-specific implementation, the general licensee should update their 10 CFR 72.212 evaluation if this activity deviates from the cask UFSAR.

Example 2

The bolts for retaining the outside lid of the outer concrete cask are being replaced with bolts of a different material with similar properties including load capacity and strength and with no other design function affected such that the lid will still be secured with the same strength as before the modification. Because the replacement bolts are equivalent in function and in characteristics (e.g., corrosion resistance) necessary to perform that function to the original bolts and the outer lid of the concrete cask continues to meet the same functional requirements to the same capacity, this activity may be screened out as an equivalent modification. If the replacement bolts have a reduced load capacity or strength, the activity would screen in and would require a full 10 CFR 72.48 evaluation.

Example 3

A licensee/certificate holder would like to modify the brand of coating used on the cask. The current coating brand is identified in the cask UFSAR. The licensee/certificate holder has determined that the new brand of coating is equivalent to the current brand, based on a demonstrated laboratory qualification process (i.e., meets the performance and operating characteristics, functional requirements, corrosion resistance, heat transfer characteristics, adherence properties, etc.). This modification may be screened out as an equivalent modification, and an evaluation is not required. The UFSAR should be updated per 10 CFR 72.70 (specific licensee) or 10 CFR 72.248 (cask CoC holder) to reflect the modification. If this modification were being made by a general licensee for a site-specific implementation, the general licensee should update their 10 CFR 72.212 evaluation to reflect this deviation from the cask UFSAR, if necessary.

Example 4

A licensee plans to place a motor vehicle fuel storage tank in close proximity to the cask transfer route from the fuel building to the ISFSI. A 72.48 screening identifies that a fire or explosion of the tank adversely impacts the UFSAR-described design capability of a cask to withstand a fire or explosion. The screening would conclude that a 72.48 evaluation of the modification is needed. Alternatively, if the screening identifies that the tank would be far enough away from the cask transfer route that the cask could not be affected by a tank fire or explosion or remains bounded by the cask UFSAR analysis, the screening would conclude that no 72.48 evaluation is needed.

Comment [NRC7]: For completeness, the document should state that while a new fire hazard may screen out as not requiring a 72.48 evaluation, for a general licensee, the 72.212 fire hazard analysis report will likely need to be updated to reflect the hazard.

EXAMPLES OF SCREENING FOR MODIFICATIONS TO PROCEDURES (NEI 5.1.1, 5.1.2, AND 5.1.4)

The following examples illustrate the 10 CFR 72.48 screening process as applied to proposed activities affecting how SSC design functions are performed or controlled :

Example 1

Operating procedures include operator actions for transport and placement of the filled cask, which are described in the UFSAR, but also address operator actions for maintenance of the transport equipment that are outside the cask and ISFSI design basis and not described in the UFSAR. A procedure modification would screen out at this step if the modification was to those procedures or parts of procedures dealing with maintenance of the transport equipment.

Example 2

If the UFSAR description of the cask loading procedure contains eight fundamental sequences, the licensee's or CoC holder's decision to eliminate one of the sequences would screen in. On the other hand, if the licensee or CoC holder consolidated the eight fundamental sequences and did not affect the method of controlling or performing cask loading, the modification would screen out.

Comment [NRC8]: Revise Example 2 to clarify that consolidation of sequences does not change the order of, or delete, loading procedure steps.

Example 3

The UFSAR describes that a dry lubricant will be used in the dry shielded canister insertion process. A procedure modification to delete the use of the lubricant or use a wet lubricant would be adverse and screen in as a change in the procedures as described in the UFSAR and require an evaluation. If a licensee/CoC holder wishes to utilize a different brand of dry lubricant that is equivalent to the current brand (justified in the screening), the modification would screen out and no evaluation would be required.

EXAMPLES OF SCREENING FOR METHOD OF EVALUATION (NEI 5.1.1, 5.1.2, AND 5.1.5)

The following example illustrates the screening of a proposed alteration to a method of evaluation (MOE):

Example

The UFSAR identifies the name and version of the computer code used for performing cask confinement performance analyses, with no further discussion of the methods employed within the code for performing those analyses. Alterations to the computer code may be screened out provided that the alterations are within the constraints and limitations identified in the associated topical report and SER. An alteration that goes beyond restrictions on the use of the method is a change to an element of the method of evaluation and must be evaluated under 10 CFR 72.48(c)(2)(viii) to determine if prior NRC approval is required.

EXAMPLES OF SCREENING FOR TESTS AND EXPERIMENTS (NEI 5.2)

Comment [NRC9]: The tests and experiments that are given as examples of activities that screen in (blocking air vents, penetrating a sealed canister) would likely violate TS requirements, and therefore would not reach the screening process.

Examples of proposed activities that would screen in as tests and experiments at this step (assuming they were not described in the UFSAR) are:

• Testing the heat transfer capabilities of a loaded spent fuel storage cask by blocking the air vents.

• Drawing gas from a loaded canister by penetrating the canister after it has been sealed.

• Testing a pressure switch on a loaded cask by raising the internal pressure beyond that described in the UFSAR

Examples of proposed activities that would "screen out" would be:

• Performing a radiography check of a concrete overpack prior to loading spent fuel.

• Information gathering that is nonintrusive to the operation or design function of the associated SSC.

EXAMPLES OF RESPONSES TO 72.48 EVALUATION QUESTION 1 (NEI 6.1)

Example 1

The proposed activity has a negligible effect on the frequency of occurrence of an accident. A negligible effect on the frequency of occurrence of an accident exists when the increase in frequency is so small or the uncertainties in determining whether an increase in frequency has occurred are such that it cannot be reasonably concluded that the frequency has actually increased (i.e., there is no clear trend toward increasing the frequency).

Example 2

The proposed activity meets applicable NRC requirements as well as the design, material, and construction standards applicable to the SSC being modified. If the proposed activity would not meet applicable requirements and standards, the change is considered to involve more than a minimal increase in the frequency of occurrence of an accident, and prior NRC approval is required.

Comment [NRC10]: Examples 1&2 seem to be more appropriate as introductory text for Examples 3&4. We suggest revising this text accordingly.

Example 3

A change is made to the ISFSI such that electrical power must be interrupted for a short time to allow connection of the pressure monitoring system to each cask as it is placed on the storage pad. Such interruptions would occur several times each year, since more than one cask is loaded at this ISFSI each year. While this power interruption does not affect the safety or confinement capability of the previously stored casks, the ability to monitor confinement integrity is lost for a short period of time. While such interruptions, if unplanned, would be permitted under the Technical Specifications for the cask, the UFSAR evaluates loss of power to the ISFSI pressure monitoring system as an off- normal event assumed to occur once per year.

In this case, prior NRC approval would be required, because the loss of power to the pressure monitoring system would occur more than once per year and would become a normal, planned event.

Example 4

Comment [NRC11]: Rewrite Example 4 to use a different scenario to make a noncredible event a credible event. The increase in cask tipover frequency due to a seismic event is very unlikely to be approved by the NRC.

A modification in cask operating procedures results in a situation where the caske would tip over during a seismic event (i.e., the cask center-of-gravity moves over the location of the bottom edge of the cask). The cask is designed for a non-mechanistic tipover event. However, the seismic analysis of the new operating configuration has changed the tipover event from a non-mechanistic event to an event than can now occur at this site.
Therefore, this modification of the operating procedures changes the frequency category of the tipover accident event to a more frequent category. The increase in the frequency of occurrence of this accident is more than minimal, and requires prior NRC approval.

Comment [NRC12]: We suggest including an example that illustrates a proposed change that causes more than a minimal increase in frequency, but does not cause the frequency category to change.

EXAMPLES OF RESPONSES TO 72.48 EVALUATION QUESTION 2 (NEI 6.2)

Comment [NRC13]: We suggest revising the Appendix to provide specific examples to illustrate the guidance in Section 6.2. The current examples are too general in their descriptions to be useful as examples.

Examples 1-4, below, illustrate cases where there would not be more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety:

Example 1

The modification involves installing additional equipment or devices (e.g., cabling, manual valves, protective features, etc.) provided all applicable design and functional requirements (including applicable codes, standards, etc.) continue to be met.

Example 2

The modification involves substitution of one type of component for another of similar function, provided all applicable design and functional requirements (including applicable codes, standards, etc.) continue to be met and any new failure modes are bounded by the existing analysis.

Example 3

The modification satisfies applicable design bases requirements (e.g., seismic and wind loadings, separation criteria, environmental qualification, etc.).

Example 4

The modification involves a new or modified fuel handling action that supports a design function credited in safety analyses, provided:

- The action (including required completion time) is reflected in procedures and training programs

- The licensee has demonstrated that the action can be completed in the time required considering the aggregate affects, such as workload or environmental conditions, expected to exist when the action is required

- The evaluation of the modification considers the ability to recover from credible errors in performance of manual actions and the expected time required to make such a recovery

- The evaluation considers the effect of the modification on ISFSI and cask design functions

Examples 5-8 are cases that would require prior NRC approval because they would result in more than a minimal increase in the likelihood of occurrence of a malfunction of a SSC important to safety:

Example 5

The modification would cause design stresses to exceed their code allowables or other applicable stress or deformation limit (if any), including vendor-specified stress limits.

Example 6

The modification would reduce system/equipment redundancy, diversity, separation, or independence.

Example 7

The modification in likelihood of occurrence of a malfunction is calculated in support of the evaluation and increases by more than a factor of two. Note: The factor of two should be applied at the component level. Certain activities that satisfy the factor of two limit on increasing likelihood of occurrence of malfunction may meet one of the other criteria for requiring prior NRC approval, e.g., exceed the minimal increase standard for accident frequency under criterion 10 CFR 72.48(c)(2)(i).

EXAMPLES OF RESPONSES TO 72.48 EVALUATION QUESTION 3 (NEI 6.3)

Example 1

A cask CoC holder has prepared a calculation showing that the ISFSI controlled area boundary may be defined at a point closer to the ISFSI than currently described in the UFSAR, and the ISFSI would still meet the 10 CFR 72.106 accident dose limits and all other regulatory requirements, including 10 CFR 72.104 limits. The new calculated offsite accident dose would be 1.1 rem. The current calculated accident dose described in the UFSAR is 1.0 rem, and the 10 CFR 72.106 limit is 5 rem. Since 10% of the difference between the UFSAR calculated dose (1.0 rem) and the regulatory limit (5.0 rem) is 0.4 rem, the increase of 0.1 rem to 1.1 rem would be less than a minimal increase in consequences (less than 10% of the difference between 1.0 rem and 5.0 rem), and prior NRC approval is not required. If the new calculated dose was 1.4 rem or higher, the change would be more than a minimal increase (more than 10% of the difference between the UFSAR value and the regulatory limit) and would require prior NRC approval. In either case, once the change is made, the new value would become the bounding value for the next 72.48 evaluation and would be put in the UFSAR at the next update.

If this change were to be made by a general ISFSI licensee on a site-specific basis, the record of the 72.48 evaluation containing the updated calculated offsite dose value would be retained and the revised value used as the bounding value for the next 72.48 evaluation. If prior NRC approval is required under 72.48, the general licensee could either request that the CoC holder for their cask system submit a CoC amendment request to the NRC under 10 CFR 72.244, if appropriate, or could submit, under 10 CFR 72.7, a request for an exemption to the 72.48(c)(2) requirement that a general licensee shall request that the CoC holder obtain a CoC amendment. An exemption request should describe the proposed change and include justification for why the CoC holder is not requesting a CoC amendment for the change, and justification for the change itself.

Comment [NRC14]: 72.106 has a minimum controlled area boundary distance of 100m. This example seems to treat the absolute distance as irrelevant, but the proposed change would only be permissible if the preexisting controlled area boundary were at a distance greater than 100m. We suggest revising the example to clarify that the 100m minimum distance would also apply to any proposed reductions.

Example 2

A site-specific licensee has evaluated the consequences of a tornado missile strike to the concrete storage modules which house the spent fuel storage canisters. It is determined that the concrete shield blocks which cover the outlet air vents on the roof could be knocked off, resulting in a temporary reduction in radiological shielding. The offsite consequence of this accident as described in the UFSAR is 30 mrem TEDE (direct and scattered radiation) to a person located at the controlled area boundary 100 meters away from the ISFSI for 8 hours per day during the 7 day recovery period.

The licensee wishes to improve the constructability of the concrete storage module by removing the "dog leg" from the pathway of the outlet vents through the concrete, and instead, use a straight-line path. The change results in a negligible increase in dose rates during normal operation. However, in the accident scenario with the loss of the shield block, it is found that the offsite dose consequences would be 200 mrem TEDE, or an increase of 170 mrem.

The change would not require prior NRC approval since the increase of 170 mrem is only 3.4 percent of the difference between the current dose consequence and the 10CFR72.106 limit of 5000 mrem [i.e. (170)/(5000-30)= 0.034].

Example 3

Following a gamma scan, it is determined that the effective thickness of the lead in a shield plug is 1/4 inch less than nominal. The fabrication specification and drawings permit only 1/8 inch less than nominal. It is proposed to accept the shield plug "as-is."

The direct effects of a decrease in effective lead thickness would be reviewed to identify potentially affected design basis parameters. In addition, the indirect effect of increased dose rates would be considered. In this case the review concludes that the offsite accident dose consequences would not increase. Therefore, no prior NRC approval would be required.

Comment [NRC15]: This conclusion would depend upon what's assumed for the accidents and where the lead is in relation to the damage. Modify the example to address this point.

Note: For spent fuel storage systems that have Technical Specification limits on shield plug dose rates, the change would be evaluated separately for compliance with the Technical Specification. Further, normal operation offsite dose consequences of the change must be evaluated per 10 CFR 72.104. This evaluation would be documented in the general licensee's 212 Report.

Comment [NRC16]: The licensee would have to do a 72.48 evaluation for this change to the 212 report. This should be discussed here too.

EXAMPLES OF RESPONSES TO 72.48 EVALUATION QUESTION 6 (NEI 6.6)

Comment [NRC17]: We suggest developing and including examples of responses to 72.48 evaluation questions 4 and 5 (NEI 6.4 and 6.5).

Example

A cask CoC holder desires to replace the fuel support breakaway clips used in a particular cask design by an energy absorption device. The breakaway clips are used to mitigate the effects of a cask drop event. This modification may introduce a new failure mechanism that could affect the mitigation of a cask drop event. But if this effect (failure of the

energy absorption device to mitigate the effects of a cask drop) was bounded by a UFSAR description of the effects of a failure of the breakaway clips to mitigate the effects of a cask drop, then a malfunction with a different result has not been created, and prior NRC approval under the criterion of 72.48(c)(2)(vi) would not be required. If failure of the breakaway clips to mitigate a cask drop event had not been described in the UFSAR, then the replacement of the clips with an energy absorption device would create a possibility for a malfunction of an SSC important to safety with a different result, and prior NRC approval under the criterion of 72.48(c)(2)(vi) would be required.

The following example illustrates this point:

Certain malfunctions are not explicitly described in the UFSAR because their effects are bounded by other malfunctions that are described. For example, failure of an air pad carrying a loaded cask and subsequent drop of the pad may not be explicitly described in the UFSAR because the drop would be bounded by the cask drop analysis.

EXAMPLES OF RESPONSES TO 72.48 EVALUATION QUESTION 7 (NEI 6.7)

Examples illustrating the two-step approach for evaluations under this criterion are provided below:

Example 1

The thickness of the material used for the fuel assembly basket tubes has been found to be below the minimum specified in the fabrication specifications and drawings. In this example, the basket tubes serve as structural components of the basket. It is proposed to accept the condition "as-is."

Identification of design basis limits

The effects of the reduced material thickness would be reviewed. The effects would include the impact on the criticality, heat transfer, and structural analyses, at a minimum. Thus, the proposed activity may impact certain numerical design basis limits such as k- effective, fuel cladding temperature, and fuel basket stresses.

Exceeded or altered

Any increase in reactivity in the criticality analysis would be compared to the k-effective design basis limit. If the revised reactivity result from the criticality analysis (i.e., the calculated k-effective) causes the k-effective design basis limit to be exceeded, then a license/CoC amendment would be required. Likewise, any revised results in the heat transfer or structural analyses would be compared to the respective design basis limits specified in the UFSAR for those disciplines.

In this example, the design basis limits are not being "altered." Therefore, this element of the review is not applicable.

Example 2

The as-built interior length of a concrete overpack is found to be less than the minimum length in the fabrication specification and drawings. An analysis shows that thermal expansion of the storage canister when placed in the overpack would result in an interference when the canister is loaded with design basis fuel assemblies. It is proposed to limit the decay heat of the fuel to be stored in the concrete overpack to 75 percent of the value reflected in the safety analysis.

Identification of Design Basis Limit

The affected parameter is cask decay heat load.

Exceeded or altered

In this case, the design basis limit has not been “exceeded” because the decay heat will be less than the limit. However, the design basis limit itself has been "altered," thus prior NRC approval is required. The issue of conservative vs. non-conservative is not germane to requiring a submittal. That is, prior NRC approval is required regardless of direction because this is a fundamental change in the ISFSI facility or cask design.