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Timothy G. Mitchell
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2CAN120801

December 11, 2008

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request Supplemental
Regarding Technical Specification Change to Add LCO 3.0.8 on the Inoperability of Snubbers and Relocate TS 3.7.8 to the TRM
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NFP-6

REFERENCE: 1. Entergy letter to NRC dated July 21, 2008, License Amendment Request Regarding Technical Specification Change to Add LCO 3.0.8 on the Inoperability of Snubbers and Relocate TS 3.7.8 to the TRM, TAC No. MD9483 (2CAN070805)

Dear Sir or Madam:

In accordance with the provisions of 10 CFR 50.90, Entergy Operations, Inc. (Entergy) submitted a request for an amendment (Reference 1) to the Technical Specifications (TS) for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed amendment would modify TS requirements for inoperable snubbers by adding a Limiting Condition for Operation (LCO) 3.0.8 and relocating the current TS 3.7.8, Shock Suppressors (Snubbers), to the Technical Requirements Manual (TRM).

The NRC notified Entergy on November 24, 2008, that additional information was required relating to station procedures and controls that would ensure the opposite train Emergency Feedwater (EFW) system would be verified operable prior to removing snubbers from service on a given system. Entergy's response to the NRC's request for additional information (RAI) is included in Attachment 1 of this submittal.

The additional information provided in Attachment 1 does not invalidate the original No Significant Hazards Considerations of the original ANO-2 TS change request (Reference 1).

This letter contains no new commitments.

If you have any questions or require additional information, please contact Dale James at 479-858-4619.

I declare under penalty of perjury under the laws of the United States of America that I am authorized by Entergy to make this request and that the foregoing is true and correct. Executed on December 11, 2008.

Sincerely,

TGM/dbb

Attachment:
1. Response to Request for Additional Information Regarding Adoption of LCO 3.0.8 (Snubbers)
2. Revised Markup of Affected Technical Specification Bases Pages (Information Only)

cc: Mr. Elmo E. Collins
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Attachment 1

To

2CAN120801

Response to Request for Additional Information
Regarding Adoption of LCO 3.0.8
(Snubbers)

**Response to Request for Additional Information
Regarding Adoption of LCO 3.0.8
(Snubbers)**

On July 21, 2008, Entergy Operations, Inc. (Entergy) submitted an amendment that would modify Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) requirements for inoperable snubbers by relocating current snubber requirements in TS 3.7.8 to the Technical Requirements Manual (TRM) and adding Limiting Condition for Operation (LCO) 3.0.8 to the TSs.

The NRC notified Entergy on November 24, 2008, that additional information was required relating to station procedures and controls that would ensure the opposite train Emergency Feedwater (EFW) system would be verified operable prior to removing snubbers from service on a given system. Entergy's response to the NRC's request for additional information (RAI) is included below.

RAI

Consistent with the staff's approval and inherent in the implementation of TSTF-372 Revision 4, licensees interested in implementing LCO 3.0.8 must, as applicable, operate in accordance with stipulations. Section 3.0, Regulatory Analysis, Subsection 3.2, Verification and Commitments, discusses the two Conditions for application of TSTF-372 specified in the model Safety Evaluation.

Condition 1

Appropriate plant procedures and administrative controls will be used to implement the following Tier 2 Restrictions. Tier 2 restrictions (Conditions) involve the identification of potentially high-risk configurations that could exist if equipment in addition to that associated with the change were to be taken out of service simultaneously, or other risk significant operational factors such as concurrent equipment testing were also involved.

(a) At least one AFW train (including a minimum set of supporting equipment required for its successful operation) not associated with the inoperable snubber(s), must be available when LCO 3.0.8a is used at PWR plants.

(b) At least one AFW train (including a minimum set of supporting equipment required for its successful operation) not associated with the inoperable snubber(s), or some alternative means of core cooling (e.g., F&B, fire water system or "aggressive secondary cooldown" using the steam generators) must be available when LCO 3.0.8b is used at PWR plants.

Regarding Condition 1.a Entergy wrote:

Condition 1(a) assumes the availability of one Emergency Feedwater (EFW) train during application of LCO 3.0.8.a. The TSTF-372 and the model SE specify the application of LCO 3.0.8.a is contingent on the assumption that the redundant train remains available. Even though ANO-1 has a unique EFW system design, the plant TS LCO and ACTION statements will ensure the system remains capable of performing its safety function with various combinations of pumps and flow paths OPERABLE. Although the TS implementation process

at ANO-1 may include this restriction in other procedures or administrative processes upon approval of this amendment, Entergy does not believe further action is required to ensure compliance with Condition 1(a) since the TS inherently prevents application of LCO 3.0.8.a due to a snubber-related condition which could render the entire EFW system inoperable.

Regarding Condition 1.b, Entergy wrote:

Condition 1(b) requires either one EFW train or some alternative means of core cooling must be available when one or more snubbers are inoperable that affect both trains of a given system. As described in Condition 1(a) above, there are no instances where the EFW system or both trains of any system being relied upon as the only core cooling method would be removed from service or any work permitting both at the same time during its associated Modes of Applicability that require these systems. Again, such a plant configuration would result in LCO 3.0.3 entry or plant shutdown, which prevents the utilization of the 12-hour allowance of LCO 3.0.8.b. Although the TS implementation process at may include this restriction in other procedure or administrative processes upon approval of this amendment. Entergy believes the TS LCO and ACTION statements will ensure the system remains capable of performing its safety function with no further action required to ensure compliance with Condition 1 (b).

It is not clear to the staff what these statements mean in terms of taking actions to implement Tier 2 restrictions. Conclusions made by the licensee that would result in exceptions to or deviations from TSTF-372 model SE requirements to establish plant procedures and administrative controls to implement Tier 2 Restrictions need to include an analysis basis for the conclusion. The license application regulatory analysis needs to address this issue for condition 1(a) and 1(b) conclusions.

REGULATORY ANALYSIS BASIS FOR RAI

Regulations

10 CFR 50.36(d)(2)(i),states:

Limiting conditions for operation. (i) Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

LCO 3.0.8 modifies TS requirements on the impact of inoperable snubbers. Under LCO 3.0.8 TS systems would remain operable when required snubbers are not capable of providing their related support function. The licensee stated that the proposed amendment is consistent with staff approved TSTF-372, Rev 4, “Addition of LCO 3.0.8, Inoperability of Snubbers.” TSTF-372, Revision 4, documents a risk-informed analysis of the proposed TS change. The risk assessment associated with the proposed delay times for entering the TS actions for the supported equipment was performed following the three-tiered approach recommended in RG 1.177 for evaluating proposed extensions in currently allowed CTs:

The second tier involves the identification of potentially high-risk configurations that could exist if equipment in addition to that associated with the change were to be taken out of service simultaneously, or other risk-significant operational factors such as concurrent equipment testing were also involved. The objective is to ensure that appropriate restrictions are in place to avoid any potential high-risk configurations.

Entergy Response

As discussed in the July 21, 2008, Entergy letter, adoption of LCO 3.0.8 requires the availability of EFW (or other core cooling method in lower modes of operation) during periods when one or more required snubbers are inoperable. While the TSs ensure an EFW train or other core cooling method is operable in accordance with the related mode of applicability, the TSs do not address which train (of a two-train system) must be operable. The NRC Safety Evaluation (SE) for adoption of TSTF-372 clearly indicates that the train of EFW or core cooling *redundant* to the system train in which a snubber is removed from service or otherwise declared inoperable must be operable in order to apply the provisions of LCO 3.0.8.

In order to ensure redundant train operability of EFW or other core cooling method relied upon, Entergy maintains several tiers of procedures and controls that prevent intrusive activities from being performed on redundant trains of equipment. Corporate procedures that govern all Entergy sites only permit work to be scheduled on one train at a time and that the aggregate risk be assessed prior to removing various safety-related components from service on a given train simultaneously. For example, if the red-train Emergency Diesel Generator (EDG) were removed from service, no intrusive activities would be permitted on or around any required green-train component, whether or not the component is related to the EDG. This administrative control even prohibits activities that could in any way affect the availability or operability of the redundant train, including activities such as scaffold erection. With the red-train EDG removed from service, other red-train components may be removed from service simultaneously, provide the aggregate station risk is maintained within acceptable limits.

In addition to Corporate upper-tier procedures, each station maintains lower-tier procedures to provide additional checks and balances to ensure redundant equipment is adequately protected during any maintenance window. If during a red-train maintenance window a green-train component is unexpectedly found to be inoperable, procedures require immediate corrective action to restore both trains to an operable status. Risk is also assessed for such emergent conditions and appropriate compensatory measures, which could include a plant shutdown, are established as warranted to reduce overall station risk.

In summary, Entergy nuclear facilities have well established controls with regard to redundant train operability which have long been a part of the Entergy culture. These controls provide ample assurance that the intent of the NRC SE requirement for ensuring the availability and operability of a redundant EFW or core cooling system train will be maintained during snubber inoperability periods. In this respect, Entergy believes no deviation from the TSTF is evident.

Notwithstanding the above, there are certain aspects of the aforementioned Condition 1(a) that must be addressed. Condition 1(a) does not address lower modes of operation when EFW is not required to be operable or Steam Generators (SGs) are otherwise unavailable. Therefore, Entergy requests deviation from TSTF-372 such that when EFW is not required to be operable by TSs, the redundant train core cooling source being relied upon during these lower modes of

operation will be consider sufficient to meet the intent of the TSTF-372 SE. This condition was identified to the NRC following TSTF-372 approval and a revision is currently being considered by the industry TSTF working group. As discussed previously, Entergy procedures currently protect redundant equipment during a given train's maintenance window. Therefore, no further administrative controls are required.

However, the TS Bases for LCO 3.0.8 as presented in TSTF-372 and the July 12, 2008, Entergy submittal does not describe the redundant EFW or core cooling source requirements. Entergy believes it is appropriate to include these restrictions in the TS Bases. In addition to providing discussion relevant to Condition 1(a) above, discussion is also included to provide guidance associated with Condition 1(b). This is necessary since ANO-2 is a two-train facility and no *redundant* EFW train would exist for a snubber that affects both trains of a given system. The affected TS Bases pages have been modified to provide discussion and guidance for various modes of operation. A revised markup of the associated TS Bases pages is included in Attachment 2 and the added guidance is included below:

> "When applying LCO 3.0.8.a, the redundant train Emergency Feedwater (EFW) system must be OPERABLE during MODES when EFW is required to be OPERABLE. When applying LCO 3.0.8.a during MODES when EFW is not required to be OPERABLE, the redundant core cooling method (such as Shutdown Cooling (SDC) system) must be available. When applying LCO 3.0.8.b, a means of core cooling must remain available (EFW, SDC, equipment necessary for feed and bleed operations, etc.). Reliance on availability of a core cooling source during modes where EFW is not required by TSs provides an equivalent safety margin for plant operations were LCO 3.0.8 not applied and meets the intent of Technical Specification Task Force (TSTF) 372."

Reliance on the redundant train core cooling source during modes where EFW is not required by TSs provides an equivalent safety margin and meets the intent of the NRC SE conditions. Therefore, Entergy believes this deviation (or additional guidance) is acceptable.

Attachment 2

To

2CAN120801

Revised Markup of Affected Technical Specification Bases Pages
(Information Only)

3.0.8 LCO 3.0.8 establishes conditions under which systems are considered to remain capable of performing their intended safety function when associated snubbers are not capable of providing their associated support function(s). This LCO states that the supported system is not considered to be inoperable solely due to one or more snubbers not capable of performing their associated support function(s). This is appropriate because a limited length of time is allowed for maintenance, testing, or repair of one or more snubbers not capable of performing their associated support function(s) and appropriate compensatory measures are specified in the snubber requirements, which are located outside of the Technical Specifications (TS) under licensee control. The snubber requirements do not meet the criteria in 10 CFR 50.36, and, as such, are appropriate for control by the licensee.

If the allowed time expires and the snubber(s) are unable to perform their associated support function(s), the affected supported system's LCO(s) must be declared not met and the ACTIONS entered in accordance with LCO 3.0.2.

LCO 3.0.8.a applies when one or more snubbers are not capable of providing their associated support function(s) to a single train or subsystem of a multiple train or subsystem supported system or to a single train or subsystem supported system. LCO 3.0.8.a allows 72 hours to restore the snubber(s) before declaring the supported system inoperable. The 72-hour allowed outage time (AOT) is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function and due to the availability of the redundant train of the supported system.

LCO 3.0.8.b applies when one or more snubbers are not capable of providing their associated support function(s) to more than one train or subsystem of a multiple train or subsystem supported system. LCO 3.0.8.b allows 12 hours to restore the snubber(s) before declaring the supported system inoperable. The 12-hour AOT is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function.

When applying LCO 3.0.8.a, the redundant train Emergency Feedwater (EFW) system must be OPERABLE during MODES when EFW is required to be OPERABLE. When applying LCO 3.0.8.a during MODES when EFW is not required to be OPERABLE, the redundant core cooling method (such as Shutdown Cooling (SDC) system) must be available. When applying LCO 3.0.8.b, a means of core cooling must remain available (EFW, SDC, equipment necessary for feed and bleed operations, etc.). Reliance on availability of a core cooling source during modes where EFW is not required by TSs provides an equivalent safety margin for plant operations were LCO 3.0.8 not applied and meets the intent of Technical Specification Task Force (TSTF) 372.

3.0.8 (continued)

LCO 3.0.8 requires that risk be assessed and managed. Industry and NRC guidance on the implementation of 10 CFR 50.65(a)(4) (the Maintenance Rule) does not address seismic risk. However, use of LCO 3.0.8 should be considered with respect to other plant maintenance activities, and integrated into the existing Maintenance Rule process to the extent possible so that maintenance on any unaffected train or subsystem is properly controlled, and emergent issues are properly addressed. The risk assessment need not be quantified, but may be a qualitative awareness of the vulnerability of systems and components when one or more snubbers are not able to perform their associated support function.

LCO 3.0.8 does not apply to non-seismic snubbers. The provisions of LCO 3.0.8 are not to be applied to supported TS systems unless the supported systems would remain capable of performing their required safety or support functions for postulated design loads other than seismic loads.

The risk impact of dynamic loadings other than seismic loads was not assessed as part of the development of LCO 3.0.8. These shock-type loads include thrust loads, blowdown loads, water-hammer loads, steam-hammer loads, LOCA loads and pipe rupture loads. However, there are some important distinctions between non-seismic (shock-type) loads and seismic loads which indicate that, in general, the risk impact of the out-of-service snubbers is smaller for non-seismic loads than for seismic loads. First, while a seismic load affects the entire plant, the impact of a non-seismic load is localized to a certain system or area of the plant. Second, although non-seismic shock loads may be higher in total force and the impact could be as much or more than seismic loads, generally they are of much shorter duration than seismic loads. Third, the impact of non-seismic loads is more plant specific, and thus harder to analyze generically, than for seismic loads. For these reasons, every time LCO 3.0.8 is applied, at least one train of each system that is supported by the inoperable snubber(s) should remain capable of performing their required safety or support functions for postulated design loads other than seismic loads.