

July 21, 2000

U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555-0001

Gentlemen:

ULNRC- 04285



**DOCKET NUMBER 50-483  
CALLAWAY PLANT  
UNION ELECTRIC COMPANY  
PROPOSED REVISION TO TECHNICAL SPECIFICATIONS 3.9.4  
"CONTAINMENT PENETRATIONS"  
TO ALLOW USE OF ADMINISTRATIVE CONTROLS  
FOR OPEN PENETRATIONS DURING REFUELING OPERATIONS**

Pursuant to 10 CFR 50.90, AmerenUE hereby requests an amendment to the Facility Operating License No. NPF-30 for Callaway Plant. The amendment request incorporates the attached change into the Callaway Plant Technical Specifications.

The proposed amendment would revise the Callaway Technical Specifications (TS) for Limiting Condition for Operation (LCO) 3.9.4, "Containment Penetrations" to allow certain containment penetrations to be open during refueling activities under appropriate administrative controls. The changes are consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-312, Revision 1. In addition, a format and editorial correction in TS 3.8.3 is being made. The correction is attributed to an error associated with the conversion application and supplements or submittal of the certified copy of the Callaway Improved Technical Specifications.

Attachment 1 is the required Affidavit. Attachment 2 provides a detailed description, safety analysis of the proposed change, and Callaway's determination that the proposed change does not involve a significant hazards consideration. Attachment 3 provides the existing TS pages marked-up to show the proposed change. Attachment 4 provides the existing TS Bases pages marked-up to show the proposed change (for information only). Attachment 5 provides a clean copy of the proposed Technical Specification pages.

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This letter identifies the actions committed to by AmerenUE and Callaway Plant in this submittal. Other statements are provided for information purposes and are not considered to be commitments. The commitments included in this submittal include:

- a. AmerenUE will implement this amendment within 30 days of NRC approval.
- b. Administrative controls will be implemented to ensure the open penetrations will be promptly closed in the event of a fuel handling accident (FHA) inside containment.
- c. Administrative controls will include an awareness of the temporary flow path conditions and designations of individuals to isolate the flow paths in the event of a FHA.

AmerenUE requests approval of this proposed License Amendment approximately 30 days prior to the beginning of the next refueling outage scheduled for April 7, 2001. Receipt of this Amendment is not required to conduct the outage or to restart the unit following the outage. However, implementation of the requested TS change prior to the outage will allow planned outage work to proceed in conjunction with critical path activities and to result in shortening the duration of the outage.

AmerenUE is submitting this License Amendment Request in conjunction with the industry consortium of five plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing or STARS. The STARS group consists of the five plants operated by TXU Electric, AmerenUE, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric, and STP Nuclear Operating Company. Other members of the STARS group have or can also be expected to submit plant specific License Amendment Requests similar to this request. These additional License Amendment Requests will be submitted either in parallel with or upon approval of this request in order to reduce the amount of NRC resources required to evaluate and to approve the requests.

Pursuant to 10 CFR 50.91(b)(1), AmerenUE is providing the State of Missouri with a copy of this proposed amendment.

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If you should have any questions on the above or attached, please contact  
Dave Shafer at (314) 554-3104 or Dwyla Walker at (314) 554-2126.

Very truly yours,



Alan C. Passwater  
Manager, Corporate Nuclear Services

DJW/jdg

- Attachments:
- 1) Affidavit
  - 2) Description of Proposed License Changes and Assessment
  - 3) Existing Marked-up Technical Specification pages
  - 4) Existing Marked-up Technical Specification Bases pages  
(for information only)
  - 5) Revised Technical Specification pages



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**ULNRC-04285**

**ATTACHMENT 2**

**DESCRIPTION OF PROPOSED LICENSE CHANGES AND ASSESSMENT**

## **SAFETY ANALYSIS**

### **1.0 INTRODUCTION**

This proposed License Amendment Request is a request pursuant to 10 CFR 50.90 to revise Technical Specification (TS) 3.9.4, "Containment Penetrations," for Callaway Plant.

In addition, format and editorial corrections in TS 3.8.3 are being made that are attributed to errors associated with the conversion application and supplements or submittal of the certified copy of the Callaway Plant Improved Technical Specifications.

### **2.0 DESCRIPTION**

The proposed License amendment would revise the Limiting Condition for Operation (LCO) 3.9.4, Item (c) by adding a NOTE to allow unisolating containment penetration flow path(s) under administrative controls during operations involving core alterations or irradiated fuel movement inside containment.

The proposed License amendment would revise TS 3.8.3, CONDITION E, to provide a Completion Time for Required Action E.2.

### **3.0 BACKGROUND**

The current Technical Specification (TS) 3.9.4 does not permit opening certain containment penetrations during operations involving core alterations or fuel movement inside containment. The proposed Technical Specification change would allow opening these containment penetration flow path(s) that provide direct access from the containment atmosphere to the outside atmosphere under administrative controls during operations involving core alterations or irradiated fuel movement inside containment.

Technical Specification 3.6.3, "Containment Isolation Valves," currently has a similar provision for temporarily opening containment penetration flow paths in MODES 1 through 4 under administrative controls. This allowance does not apply during refueling operations when the need for containment integrity is less. The allowance to keep penetration flow paths open with administrative controls in place will support the performance of other outage activities concurrent with fuel handling activities. The existing TS would require that some outage activities be interrupted while fuel handling activities or core alterations are in progress. The proposed revision will allow for more

efficient performance of outage work while continuing to provide an acceptable barrier against the release of fission product radioactivity to the outside atmosphere during core alterations or fuel handling activities inside containment.

Administrative controls will be implemented to ensure in the event of a fuel handling accident (FHA) inside containment, the open penetrations will be promptly closed. These administrative controls include an awareness of the temporary flow path conditions and the designation of individuals to isolate the flow paths in the event of a FHA. The proposed change is described below and is consistent with NRC approved Industry/TSTF Standard Technical Specification Change Traveler, TSTF-312, Revision 1 (Reference 1).

#### 4.0 TECHNICAL ANALYSIS

During core alterations or movement of irradiated fuel assemblies within containment, a release of fission product radioactivity to the environment due to a FHA inside containment will be restricted to required limits when the TS requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in TS 3.6.1, "Containment."

The requirements of TS 3.9.4, "Containment Penetrations," ensure that the consequences of a postulated FHA inside containment during core alterations or irradiated fuel handling activities remain within acceptable limits. The LCO establishes containment penetration closure requirements, which limit the potential escape paths for fission products by ensuring that there is at least one integral barrier to the release of radioactive material. LCO 3.9.4 requires the equipment hatch to be closed and held in place by four bolts; a minimum of one door in the emergency airlock to be closed and at least one door in the personnel airlock to be capable of being closed; each penetration providing direct access from the containment atmosphere to the outside atmosphere either be closed by a manual or automatic isolation valve, blind flange, or "equivalent", or each penetration providing direct access from the containment atmosphere to the outside atmosphere is capable of being closed by an operable containment purge isolation valve.

As discussed in the TS Bases, Background section for TS 3.9.4, "equivalent" isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for containment penetrations during fuel movement.

The proposed TS change to allow the containment penetration flow path(s) to remain open while using administrative controls fully implements NRC approved TS traveler TSTF-312, Revision 1. Further, this approach is consistent with the administrative controls currently allowed by Callaway Plant TS for more restrictive, higher operational modes. Current provisions in TS 3.6.3, "Containment Isolation Valves," allow penetration flow paths to be unisolated under administrative controls in MODES 1

through 4. The controls include a designated operator having continuous communication with the Control Room who can isolate the open valve in the event of an accident. This allowance has been determined to be an acceptable means to allow the opening of flow paths in consideration of the administrative controls that minimize the impact of an accident. These modes are more significant than during refueling operations due to the RCS energy and potential to provide a significant motive force for the expulsion of radionuclides, subsequent to a design basis accident.

A similar allowance is acceptable for penetrations that are open during irradiated fuel movement or core alterations provided appropriate administrative controls are utilized. During core alterations or irradiated fuel movement activities inside containment, the potential for a FHA resulting in containment pressurization is negligible since the reactor is shutdown. Therefore, allowing penetration flow path(s) that have direct access from the containment atmosphere to the outside atmosphere to be unisolated is acceptable during refueling operations provided appropriate administrative controls are used. These proposed controls will include an awareness of the open penetration and designation of individual(s) readily available for closing the open penetration in the event of a FHA inside containment.

The Callaway Plant design basis FHA is defined as the dropping of a spent fuel assembly onto the spent fuel pool fuel storage area or inside containment. Both analyses assume the rupture of the cladding of all the fuel rods in the assembly. In addition, the inside containment case assumes that 20% of the rods in an additional assembly are damaged. These FHA events are postulated for safety system design purposes even though many administrative controls and physical limitations are imposed on fuel handling operations. Section 15.7.4 of the FSAR (Reference 2) discusses the consequences of a postulated FHA inside containment. The results from the current analysis of a FHA indicate an exclusion area boundary thyroid dose of 73.0 REM and whole body dose of 0.334 REM. These results are well within the 10 CFR 100 (Reference 3) offsite dose limits of 300 REM thyroid and 25 REM whole body, respectively, and less than the guideline values of Standard Review Plan, Section 15.7.4, Revision 1 (Reference 4).

The FHA analysis presented in the FSAR (Reference 2) considered dropping a single irradiated fuel assembly in either the containment or fuel building. The postulated FHA inside containment with the personnel airlock doors remaining open, remains the limiting FHA when considering open penetration flow paths. In the event of a FHA inside containment with open penetrations, transmission of radionuclides to the outside environment is unlikely. This is because the dispersion of radioactive material through the containment will not be driven by any pressure differential resulting from the accident. The administrative controls for prompt closure of the containment penetration flow paths would minimize the potential spread of radioactive isotopes from the containment to the outside environment. Therefore, following a FHA inside containment, the lack of containment pressurization provides sufficient time to manually isolate the

penetration flow paths to minimize dose consequences. The consequences of a FHA inside containment with open penetration flow paths are bounded by the current analysis described in the FSAR. This ensures that offsite dose is well within the 10 CFR 100 regulatory limits and less than the guideline values of Standard Review Plan, Section 15.7.4, Revision 1.

Amendment No. 114 (Reference 5) approved leaving the containment air lock open during irradiated fuel movement and core alterations. In that application, AmerenUE recalculated the doses. The analysis calculated the doses for the 0-2 hour period at the exclusion area boundary. The calculated doses were within the Standard Review Plan acceptance criteria of 6 REM to the whole body and 75 REM to the thyroid. As discussed in Amendment No. 114, the analysis assumes all radioactive material from the FHA is released to the environment within a two hour period. This results in the same impact of potential dose consequences from a simultaneous release of gaseous effluents through an unisolated penetration flow path and the open personnel airlock doors. Therefore, allowing penetration flow paths to be unisolated during core alterations or movement of irradiated fuel will not invalidate the conclusion that the potential dose consequences from a FHA will be well within the 10 CFR Part 100 limits.

In addition to the impact on offsite radiological consequences, analyses performed in support of Amendment No. 114 remain bounding and the radiological consequences to the Control Room operator are unaffected by the proposed change.

The NRC has historically required plants' technical specifications to maintain containment closure during core alterations and irradiated fuel handling as a defense-in-depth measure to further limit releases. This has been relaxed by allowing both doors to the containment personnel air lock and selected containment penetrations to be open during core alterations and irradiated fuel handling with provisions in place to quickly close one door or isolate the penetration (References 1 and 6). AmerenUE proposes to extend the same provisions for penetration flow paths open during core alterations and irradiated fuel handling.

These procedural controls include:

- a. Appropriate personnel will maintain an awareness of the open status of the penetration flow path(s) during core alterations and movement of irradiated fuel assemblies within containment.
- b. Specified individuals will be designated and readily available to promptly isolate open penetration flow paths in the event of a FHA inside containment.

Based on the analysis of the FHA and the administrative controls specified for the proposed allowance to unisolate containment penetration flow paths, the proposed changes are acceptable. With respect to the proposed administrative controls, the

proposed license amendment provides assurance that offsite dose levels associated with a FHA inside containment will be maintained well within the applicable regulatory limits of 10 CFR 100.

### **Administrative Changes to Correct Editorial/Format Errors**

License Amendment No. 133 and the associated Safety Evaluation was issued on May 28, 1999 for the conversion of the Callaway Plant Technical Specifications (pre Amendment No. 133) to the Improved Technical Specifications (post Amendment No. 133). Subsequent to implementation of Amendment No. 133, AmerenUE has identified a format and editorial change that requires correcting.

The proposed License amendment would revise TS 3.8.3, CONDITION E, to provide the correct format consistent with TS 1.3 "Completion Times." Specifically, a Completion Time is specified for Required Action E.2.

## **5.0 REGULATORY ANALYSIS**

### **5.1 No Significant Hazards Determination**

AmerenUE has evaluated whether or not a significant hazards consideration is involved with the proposed changes by focusing on the three standards set forth in 10 CFR 50.92(c) as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The status of the penetration flow paths during refueling operations has no effect on the probability of the occurrence of any accident previously evaluated. The proposed revision does not alter any plant equipment or operating practices in such a manner that the probability of an accident is increased. Since the consequences of a FHA inside containment with open penetration flow paths are bounded by the current analysis described in the FSAR and the probability of an accident is not affected by the status of the penetration flow paths, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes to correct editorial/format errors involve corrections to the technical specifications that are associated with the original conversion application and supplements or the certified copy of the Improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements in the technical specifications.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The open containment penetration flow paths are not accident initiators and do not represent a significant change in the configuration of the plant. The proposed allowance to open the containment penetrations during refueling operations will not adversely affect plant safety functions or equipment operating practices such that a new or different accident could be created.

The proposed changes to correct editorial/format errors involve corrections to the technical specifications that are associated with the original conversion application and supplements or the certified copy of the improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements on the technical specifications.

Therefore, the proposed revision will not create a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

Technical Specification LCO 3.9.4 closure requirements for containment penetrations ensure that the consequences of a postulated FHA inside containment during core alterations or irradiated fuel handling activities are minimized. The LCO establishes containment closure requirements, which limit the potential escape paths for fission products by ensuring that there is at least one integral barrier to the release of radioactive material. The proposed change to allow the containment penetration flow paths to be open during refueling operations under administrative controls does not significantly affect the expected dose consequences of a FHA because the limiting FHA is not changed. The proposed administrative controls provide assurance that prompt closure of the penetration flow paths will be accomplished in the event of a FHA inside containment thus minimizing the transmission of radioactive material from the containment to the outside environment. Under the proposed TS change, the provisions to promptly isolate open penetration flow paths provide assurance that the offsite dose consequences of a FHA inside containment will be minimized.

The proposed changes to correct editorial/format errors involve corrections to the technical specifications that are associated with the original conversion application and supplements or the certified copy of the Improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements in the technical specifications.

Therefore, the proposed changes to the Technical Specifications do not involve a significant reduction in the margin of safety.

Based on the above evaluations, AmerenUE concludes that the activities associated with the above described changes present no significant hazards under the standards set forth in 10 CFR 50.92 and that there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change. Moreover, because this change does not involve a significant hazards consideration, it will also not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

## **5.2 Regulatory Safety Analysis**

### Applicable Regulatory Requirements/Criteria

The regulatory basis for TS 3.9.4, "Containment Penetrations," is to ensure that the primary containment is capable of containing fission product radioactivity that may be released from the reactor core following a FHA inside containment. This ensures that offsite radiation exposures are maintained well within the requirements of 10 CFR 100.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 16, "Containment Design," requires that reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as the postulated accident conditions require.

GDC 54, "Piping Systems Penetrating Containment," requires that piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

GDC 56, "Primary Containment Isolation," describes the isolation provisions that must be provided for lines that connect directly to the containment atmosphere and which penetrate primary reactor containment unless it can be demonstrated that the isolation provisions for a specific class of lines are acceptable on some other defined basis.

GDC 61, "Fuel Storage and Handling and Radioactivity Control," requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions.

U. S. NRC Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors," is NRC guidance which describes a method acceptable to the NRC staff for licensee evaluation of the potential radiological consequences of a fuel handling accident.

NUREG-0800, "U. S. NRC Standard Review Plan," Section 15.7.4, provides guidance to the NRC staff for the review and evaluation of system design features and plant procedures provided for the mitigation of the radiological consequences of postulated fuel handling accidents.

The parameters of concern and the acceptance criteria applied are based on the requirements of 10 CFR 100 with respect to the calculated radiological consequences of a FHA and GDC 61 with respect to appropriate containment, confinement, and filtering systems.

### Analysis

The method of analysis used for evaluating the potential radiological consequences of the postulated fuel handling accident is in compliance with Regulatory Guide 1.25 and the guidance in NUREG-0800, Section 15.7.4. The analysis presented in Section 15.7.4 of the Callaway Plant FSAR, demonstrating the adequacy of the system design features and plant procedures provided for the mitigation of the radiological consequences of postulated fuel handling accidents, assumes no credit is taken for iodine removal by the atmosphere filtration system filters. All radioactivity released to the containment is assumed to be released to the environment at ground level over a two hour period.

### Conclusion

The technical analysis performed by AmerenUE demonstrates that the consequent doses at the exclusion area and low population zone boundaries are well within the limits of 10 CFR 100. Therefore, the proposed License amendment is in compliance with GDC 16, 54, 56, and 61 as well as Regulatory Guide 1.25, and the criteria contained in NUREG-0800, Section 15.7.4.

## **6.0 ENVIRONMENTAL EVALUATION**

AmerenUE has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. AmerenUE has evaluated the proposed change and has determined that the change does not involve (i) a significant hazards consideration, (ii) a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

## **7.0 REFERENCES**

1. Industry/TSTF Standard Technical Specification Change Traveler TSTF-312, "Administratively Control Containment Penetrations," Rev. 1.
2. FSAR Section 15.7.4, "Fuel Handling Accidents."
3. 10 CFR Part 100, Paragraph 11, "Determination of Exclusion Area, Low Population Zone, and Population Center Distance."
4. NUREG-0800, Standard Review Plan, Section 15.7.4, Rev. 1, July 1981.
5. Letter dated July 15, 1996 from Kristine M. Thomas, NRC to Donald Schnell, Union Electric Company, "Callaway Plant - Amendment No. 114 to Facility Operating License No. NPF-30 (TAC No. M94456)."
6. Federal Register, 65 FR 9017 Vol. 65, NO. 36.
7. Letter from Ronald W. Hernan, Office of Nuclear Reactor Regulation (USNRC) to J. A. Scalice, Chief Nuclear Officer and Executive Vice President, Tennessee Valley Authority dated February 11, 2000.

## 8.0 PRECEDENTS

There are precedents for allowing containment penetrations to be open during refueling activities using appropriate administrative controls. The Tennessee Valley Authority operating licenses for Sequoyah Unit 1, Operating License No. DPR-77 and Docket No. 50-327, and for Sequoyah Unit 2, Operating License No. DPR-79 and Docket No. 50-328, have been amended to allow containment penetrations to be open during refueling activities using appropriate administrative controls (Reference 6). These amendments, Nos. 249 and 240 respectively, were issued on February 11, 2000 (Reference 7).

The significant difference between the Sequoyah change and the change proposed herein is that the Sequoyah plant design includes a secondary containment enclosure which is designed to hold up radioactive gases prior to their filtered release (Reference 7) while the Callaway Plant design includes no such system. The AmerenUE analysis of a FHA inside containment takes no credit for iodine removal by the atmosphere filtration system filters but assumes that all activity released is released at ground level to the environment over a two hour period.

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**ATTACHMENT 3**

**EXISTING MARKED-UP TECHNICAL SPECIFICATION PAGES**

**T/S 3.9.4, page 3.9-6**

**T/S 3.8.3, page 3.8-20**

3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

- LCO 3.9.4 The containment penetrations shall be in the following status:
- a. The equipment hatch closed and held in place by four bolts;
  - b. One door in the emergency air lock closed and one door in the personnel air lock capable of being closed; and
  - c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
    - 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
    - 2. capable of being closed by an OPERABLE Containment Purge Isolation valve.



APPLICABILITY: During CORE ALTERATIONS,  
During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately

**INSERT A**

----- NOTE -----

Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One or more DGs with two starting air receivers in service with pressure &lt; 435 psig and ≥ 250 psig.</p> <p><u>OR</u></p> <p>One or more DGs with only one starting air receiver in service with pressure &lt; 610 psig and ≥ 300 psig.</p>	<p>E.1 Restore two starting air receivers with pressure ≥ 435 psig.</p> <p><u>OR</u></p> <p>E.2 Restore one starting air receiver with pressure ≥ 610 psig.</p>	<p>48 hours</p> <p><i>48 hours</i></p>
<p>F. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs diesel fuel oil, lube oil, or starting air subsystems not within limits for reasons other than Condition A, B, C, D, or E.</p>	<p>F.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

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**ATTACHMENT 4**

**EXISTING MARKED-UP TECHNICAL SPECIFICATION  
BASES PAGES  
(For Information Only)**

**Bases 3.9.4, page B 3.9.4-3  
Bases 3.9.4, page B 3.9.4-5**

BASES (continued)

APPLICABLE  
SAFETY  
ANALYSES

During CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). The fuel handling accident (in containment) analyzed in Reference 2 consists of dropping a single irradiated fuel assembly onto other irradiated fuel assemblies. The requirements of LCO 3.9.7, "Refueling Pool Water Level," and the minimum decay time of 100 hours prior to CORE ALTERATIONS ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 3), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values.

Containment penetrations satisfy Criterion 3 of 10CFR 50.36(c)(2)(ii).

LCO

This LCO limits the consequences of a fuel handling accident in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge penetrations and the personnel air lock. For the OPERABLE containment purge penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge Isolation System to ensure that releases through the valves are terminated, such that radiological doses are within the acceptance limit. For the containment personnel air lock, one air lock door must be capable of being closed. Both containment personnel air lock doors may be open during movement of irradiated fuel or CORE ALTERATIONS, provided an air lock door is capable of being closed. Administrative controls ensure that 1) appropriate personnel are aware that both personnel air lock doors are open, 2) a specified individual(s) is designated and available to close the air lock following a required evacuation of containment, and 3) any obstruction(s) (e.g. cables and hoses) that could prevent closure of an open air lock can be quickly removed (Ref. 1).

← INSERT B →

APPLICABILITY

The containment penetration requirements are applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment because this is when there is a potential for a fuel handling accident. Proper installation and removal of the upper internals with irradiated fuel in the reactor vessel does not constitute a CORE ALTERATION or a movement of irradiated fuel. Therefore, this LCO is

(continued)

## INSERT B

The LCO is modified by a NOTE allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident (Ref. 4).

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.9.4.2

This Surveillance demonstrates that each containment purge isolation valve actuates to its isolation position on manual initiation or on an actual or simulated high radiation signal. The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge Isolation instrumentation requires a CHANNEL CHECK every 12 hours, an ACTUATION LOGIC TEST every 31 days on a STAGGERED TESTS BASIS, and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a TADOT and a CHANNEL CALIBRATION are performed. The system actuation response time is demonstrated every 18 months on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances will ensure that the valves are capable of closing after a postulated fuel handling accident to limit a release of fission product radioactivity from the containment.

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REFERENCES

1. Amendment 114 to Facility Operating License No. NPF-30, Callaway Unit 1, dated July 15, 1996.
2. FSAR, Section 15.7.4.
3. NUREG-0800, Section 15.7.4, Rev. 1, July 1981.

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4. Amendment XXX to Facility Operating License No. NPF-30, Callaway Unit 1, dated X, X, XX.

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**ATTACHMENT 5**

**REVISED TECHNICAL SPECIFICATION PAGES**

**T/S 3.9.4, page 3.9-6**  
**T/S 3.8.3, page 3.8-20**

3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

LCO 3.9.4 The containment penetrations shall be in the following status:

- a. The equipment hatch closed and held in place by four bolts;
- b. One door in the emergency air lock closed and one door in the personnel air lock capable of being closed; and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
  - 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
  - 2. capable of being closed by an OPERABLE Containment Purge Isolation valve.

----- NOTE -----  
 Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.  
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APPLICABILITY: During CORE ALTERATIONS,  
 During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment.	Immediately





# Research Reactor Center

University of Missouri-Columbia

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Director  
Division of Licensee Performance and Quality Evaluation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Operator Licensing Branch

Reference: Docket 50-186  
University of Missouri Research Reactor  
License R-103

Subject: NOTIFICATION REQUIRED BY 10 CFR 55.55 (a)

Dear Sir:

This letter is sent to notify the U.S. Nuclear Regulatory Commission that the following persons have terminated their employment with the University Research Reactor. We request that the licenses for these individuals be terminated.

<u>Name</u>	<u>License No.</u>	<u>Docket No.</u>
Anthony R. Schoone	SOP-30379	55-30191
William R. Oldham	SOP-70117	55-70053
Robert J. Agassie	SOP-70281	55-70136

Sincerely,

J. Charles McKibben  
Interim Reactor Manager