

August 11, 1992

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Gentlemen:

ULNRC-2682
TAC No. M84230

DOCKET NUMBER 50-483
CALLAWAY PLANT
EMERGENCY TECHNICAL SPECIFICATION CHANGE
TO SURVEILLANCE REQUIREMENT 4.3.1.1

Reference: 1. ULNRC-2681, dated August 10, 1992

Union Electric Company (UE) herewith transmits an application for emergency amendment to Facility Operating License No. NPF-30 for Callaway Plant. The change proposes a one time extension to the surveillance interval specified for Technical Specification Surveillance 4.3.1.1, Table 4.3-1, Functional Unit 1 (Manual Trip). As indicated in Attachment 4, the surveillance of the manual reactor trip switch contacts and wiring for the shunt trip and undervoltage trip circuits would be deferred until the next entry into Mode 3. The Reactor Trip Breaker and automatic trip circuit surveillance requirements would be unaffected by this amendment.

Reference 1 transmitted a request for Temporary Waiver of Compliance (TWOC) for which oral approval was granted on August 7, 1992.

On August 7, 1992, during routine review of industry operating experience, Union Electric learned that another licensee with a plant similar to Callaway had requested a TWOC for the same surveillance. Further review of our procedures revealed a similar deficiency. The current surveillance procedure used for the manual trip function independently tests the shunt trip and undervoltage trip functions at the breakers, but does not test the wiring and control room switch contacts for each function, the shunt trip attachment and undervoltage trip attachment, independently. Union Electric notified the NRC on August 7, 1992, that it was likely that a TWOC would be needed.

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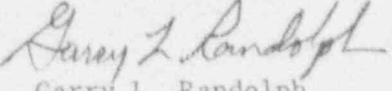
This situation leading to the need for an emergency Technical Specification change could not be avoided since UE acted on the issue immediately upon discovery.

Pursuant to 10CFR50.91(a)(5), UE hereby requests emergency authorization and approval of this proposed amendment. The requested emergency authorization is appropriate because this amendment request involves no significant hazards consideration (Attachment 2). In addition, the present situation could not be avoided as noted above. This emergency Technical Specification amendment is required because this surveillance cannot be fully completed with the plant in Mode 1 or 2 without added risk and without special testing and reconfiguration of the system. The results of the safety evaluation (Attachment 1) show that the reactor trip system remains functional and that the effect of deferring the surveillance is minimal. There is no adverse effect on the health and safety of the public.

The Callaway On-Site Review Committee and the Nuclear Safety Review Board have reviewed and approved this request.

In accordance with 10CFR50.91(b), UE will promptly provide the State of Missouri with a copy of this proposed amendment to ensure their awareness of the request. We appreciate your prompt attention to this matter.

Very truly yours,


Garry L. Randolph

GLR/lrj

- Attachments:
1. Safety Evaluation
 2. Significant Hazards Evaluation
 3. Environmental Consideration
 4. Technical Specification Changes

STATE OF MISSOURI)
) S S
CALLAWAY COUNTY)

Garry L. Randolph, of lawful age being first duly sworn upon oath, says that he is Vice President-Nuclear and an office of Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Garry L. Randolph
Garry L. Randolph
Vice President
Nuclear

SUBSCRIBED and sworn to before me this 11th day of August, 1992.

J.A. Clark
Notary Public

J.A. CLARK
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My Commission Expires Oct. 20, 1992

ULNRC-2682

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ULNRC-2682

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SAFETY EVALUATION

Proposed Change:

This emergency amendment request revises Technical Specification 3/4.3.1, Table 4.3-1, Functional Unit 1 (Manual Reactor Trip) and its associated Note 16 which applies to the Trip Actuating Device Operational Test (TADOT). This surveillance requires the following:

"The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the Undervoltage and Shunt Trip circuits for the Manual Reactor Trip function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit."

The proposed change adds a footnote which states the following:

"Complete verification of OPERABILITY of the manual reactor trip switch circuitry shall be performed prior to startup from the first shutdown to Mode 3 occurring after August 7, 1992."

Background:

On August 7, 1992, at approximately 1100 CDT, a routine review of industry operating experience indicated that a licensee with a plant similar to Callaway had determined that surveillance procedures for testing manual actuation of the reactor trip breakers did not meet Technical Specification requirements. A review of Callaway procedures and surveillance history indicated a similar deficiency with the testing relied upon to satisfy Technical Specification Surveillance 4.3.1.1, Table 4.3-1, Functional Unit 1 (Manual Reactor Trip). Specifically, the current procedures independently test the shunt trip and undervoltage trip functions at the breaker, but do not test the wiring and control room switch contacts for each function.

The testing inadequacy for the Manual Reactor Trip function TADOT was discussed by Union Electric representatives (Messrs: J. D. Blosser, A. C. Passwater, et. al.) with NRC Region III and NRC Office of Nuclear Reactor Regulation representatives (Messrs: W. L. Forney, J. A. Zwoinski, et. al.) on August 7, 1992. During this conference call, Union Electric requested verbal authorization for a Temporary Waiver of Compliance (TWOC) from Technical Specification Surveillance Requirement 4.3.1.1, Table 4.3-1, Function Unit 1 as it pertains to the Manual Reactor Trip Function TADOT. The NRC authorized the TWOC at 1635 CDT. Reference 1 is the written request for the TWOC.

This emergency Technical Specification amendment is required because this surveillance cannot be fully completed with the plant in Mode 1 or 2 without added risk and without special testing and reconfiguration of the system. Evaluation of this testing is under review to determine its feasibility and its impact on nuclear safety. The plant is currently in Mode 1 at 100% power.

Description of the Reactor Trip System:

The Reactor Trip System (RTS) maintains reactor operation within a safe region by automatically tripping the reactor whenever the limits of the region are approached. The RTS automatically initiates a reactor trip:

- a. Whenever necessary to prevent fuel damage for an anticipated operational transient (ANS Condition II),
- b. To limit core damage for infrequent faults (ANS Condition III), and
- c. So that energy generated in the core is compatible with the design provisions to protect the reactor coolant pressure boundary for limiting fault conditions (ANS Condition IV).

The reactor trip circuits automatically open the reactor trip breakers whenever a condition monitored by the RTS reaches a preset level. To ensure a reliable system, high quality is factored into the design, components, manufacturing, quality control and testing. In addition to redundant channels and trains, the design approach provides an RTS that monitors numerous system variables, thereby providing protection system functional diversity. The extent of this diversity has been evaluated for a wide variety of postulated accidents. Callaway FSAR Section 7.2 describes the RTS detail, including each of the automatic trip functions and the protection provided by each trip.

A manual trip function is provided as part of the RTS. The manual trip function consists of two switches with two outputs on each switch. One output is used to actuate the Train A reactor trip breaker (RTB) and the other output actuates the Train B RTB (see FSAR Figure 7.2-1 sheet 2). Operating a manual trip switch removes the voltage from the undervoltage trip attachment (UVTA) coil, de-energizing the shunt trip relay as well (as is the case for automatic reactor trips). The manual trip switch also directly energizes the shunt trip attachment (STA) coil. The manual reactor trip function serves as a backup to the automatic trip functions. Only automatic trip functions are assumed in the analysis of the FSAR Chapter 15 accidents.

Red and green position lights are included on the Main Control Board for breaker position. These lights are powered from the same fused 125 VDC supply used for closing and shunt-tripping the circuit breakers. Illumination of the green light indicates that the breaker is open and power is available for closing and tripping the breaker. The red light indicates that the breaker is closed. Since the red light is connected in series with the shunt trip coil, the light indicates that power is available to the shunt trip device and that there is circuit continuity in the shunt coil. This provides an indication that the shunt trip coil is ready to perform its function when required.

The shunt trip coils in the reactor trip breakers are powered from the 125 VDC Class 1E station batteries. Normally, the shunt trip coils are in a de-energized condition. When the trip breakers are closed, the red lamp current (approx. 50 mA) flows through the trip coil to monitor the circuit continuity. This current is not large enough to actuate the trip coil armature. The reactor trip signal applies a nominal voltage of 125 VDC to each shunt trip coil in the redundant trains. As the breaker trips, its auxiliary switch opens to de-energize the shunt trip coil.

The Callaway Technical Specifications define the surveillance testing requirements for the RTS. All surveillances associated with the automatic reactor trip functions are current and the automatic trip function is OPERABLE. Technical Specification Table 4.3-1 Functional Unit 19 (Reactor Trip Breaker) and its associated Note 7 requires that each train be tested on a 60 day Staggered Test Basis and the TABOT independently verifies the OPERABILITY of the undervoltage and shunt trip attachments. This surveillance requirement has been met for each RTB and demonstrates the operability of the diverse tripping mechanisms for the RTBs.

The current surveillance procedure used for the manual trip function independently tests the shunt trip and undervoltage trip functions at the breakers, but does not test the wiring and control room switch contacts for each function, the STA and UVTA, independently.

The Callaway RTB design included both the undervoltage and shunt trip coils since the plant was licensed in 1984. The pre-operational test procedure verified that the undervoltage and shunt trip attachments were independently activated from the manual trip switches. NRC Generic Letter 85-09 (Reference 2) and Reference 3 added this requirement (Note 16 of Table 4.3-1) to the Callaway Technical Specifications. The undervoltage portion of the manual trip function was properly tested in accordance with Technical Specifications through Refuel 2 in the fall of 1987. The shunt trip test specified by this procedure has subsequently been determined to be inadequate. Prior to Refuel 3, the requirements for testing the UV and shunt trip portion of the handswitch circuitry were deleted for unknown reasons. The manual trip function has been utilized to trip the reactor during refueling outages at least once every 18 months since initial startup. This has verified that the manual reactor trip switches and circuitry provide a reactor trip through at least one path and most likely both the undervoltage and shunt trip attachments.

Based on the testing history for the manual trip function, the design of the switch, and the periodic use of a manual trip switch for plant shutdowns and surveillance tests, there is a high degree of confidence that the manual trip circuitry is fully functional. Union Electric is investigating the circumstances involved in the revisions of the surveillance procedures which led to this testing inadequacy.

The Callaway Individual Plant Examination (IPE) evaluates the manual trip for Anticipated Transients Without Scram (ATWS) events. Callaway has an approved AMSAC system installed and operable. A complete failure of the manual trip switches would result in an increase in core damage frequency of 0.5%.

Evaluation:

The proposed change does not involve an unreviewed safety question because operation of Callaway Plant in accordance with this change would not:

- a. Involve an increase in the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Final Safety Analysis Report. The reactor trip breaker shunt and under-voltage trip actuation circuitry is redundant and reliable. Although the surveillance testing did not adequately test this portion of the manual reactor trip function, there is no reason to believe that any element of the manual trip function is not functional. If for some reason, manual actuation of the shunt trip failed to operate, the diversity and redundancy of the reactor protection system would still enable it to perform its design function. Emergency Operating Procedure FR-3.1, "Response to Nuclear Power Generation," directs the operators to perform the following actions in the event that the manual reactor trip function is unavailable:
 1. Open the supply breakers to load centers PG19 and PG20, de-energizing the CRDM motor generator sets.
 2. Manually insert the control rods.
 3. Ensure the turbine is tripped.
 4. Ensure auxiliary feedwater flow.
 5. Initiate immediate RCS boration.
 6. Dispatch an operator to locally open the RTBs.

The accidents evaluated in Chapter 13 of the Callaway FSAR rely on the automatic trip function of the RTS. No credit is assumed for the manual trip function. The automatic portion of the reactor trip system is not impacted by this change. The manual portion, because of the highly reliable equipment, is essentially unaffected due to lack of testing.

Therefore, since the response of the plant to an accident is unchanged, there is no significant increase in either the probability or consequences of an accident previously evaluated as a result of this proposed change.

- b. Create the possibility for an accident or malfunction of equipment of a different type than any previously evaluated in the Final Safety Analysis Report. The proposed change does not affect the operation or response of any plant equipment or introduce any new failure mechanism. Therefore, the previous accident analyses are unchanged and bound all expected plant transients and there are no new or different accident scenarios introduced.
- c. Involve a reduction in the margin of safety as defined in the basis for any Technical Specification. The proposed change will not reduce the margin of safety defined in the BASES of any Technical Specification. The BASES of Technical Specification 3/4.3-1, Reactor Trip System Instrumentation, states in part that OPERABILITY of the RTS ensures that a reactor trip will occur when needed. The accidents evaluated in Chapter 15 of the Callaway FSAR rely on the automatic trip function of the RTS. No credit is assumed for the manual trip function. The RTS possesses several diverse and independent features which enable it to shut down the reactor on demand. The operation of any of these features demonstrates that the RTS is capable of performing its safety function. The operation of at least two of the eight contacts necessary to affect a manual reactor trip have been demonstrated at least every 18 months. Therefore, the assumptions in the BASES of the Callaway Technical Specifications are not affected and the proposed change will not result in a significant reduction in the margin of safety.

Conclusion.

Based on the preceding discussion, the proposed change (for a period of up to 14 months) will not adversely affect or endanger the health and safety of the general public. Previous testing and periodic use of the manual reactor trip switches provide a high degree of confidence that the manual trip circuitry is fully functional. The redundancy and diversity within the RTS, coupled with the aforementioned surveillances and routine switch use during outages and the fact that the manual trip is not assumed in Chapter 15 accident analyses provide reasonable assurance that Callaway Plant will continue to operate in a safe manner.

References:

1. ULNRC-2681 dated 8/10/92
2. NRC Generic Letter 85-09 dated 5/23/85
3. ULNRC-1240 dated 1/9/86

SIGNIFICANT HAZARDS EVALUATION

This emergency amendment request revises Technical Specification 3/4.3.1, Table 4.3-1, Functional Unit 1 (Manual Reactor Trip) and its associated Note 16 which applies to the Trip Actuating Device Operational Test (TADOT). The current surveillance procedure independently tests the shunt trip and undervoltage trip functions at the breakers, but does not test the wiring and control room switch contacts for each function, via the shunt trip attachment (STA) and undervoltage trip attachment (UVTA), independently. The proposed change is a modification to Note 16 of Table 4.3-1 to defer until the next Mode 3 shutdown a complete surveillance of this portion of the manual reactor trip circuitry.

The proposed change does not involve a significant hazards consideration because operation of Callaway Plant in accordance with this change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

The manual reactor trip function TADOT was correctly performed during pre-operational testing. Since that time, due to procedural inadequacy, the manual trip surveillances did not verify the operation of control room switch contacts or the wiring from the control board to the reactor trip switchgear. This portion of the circuitry was exercised during shutdowns; however, this routine use was not part of a surveillance test nor did it confirm independent operation of the UVTA and STA. Although the surveillance testing did not adequately test this portion of the manual reactor trip function, there is no reason to believe that any element of the manual trip function is not functional. If for some reason, manual actuation of the shunt and UV trip failed to operate, the diversity and redundancy of the Reactor Protection System would still enable it to perform its design function. The accidents evaluated in Chapter 15 of the Callaway FSAR rely on the automatic trip function of the Reactor Protection System. No credit is assumed for the manual trip function. Further, all surveillances performed on the automatic trip functions, with the independent verification of UVTA coil de-energization and STA energization via the closing of the shunt trip relay contact, have been performed correctly. Therefore, since the response of the plant to an accident is unchanged, there is no significant increase in either the probability or consequences of an accident previously evaluated as a result of this proposed change.

2. Create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change does not involve any design changes or hardware modifications nor will there be any changes to the intended manner of plant operation or in the method by which any safety-related plant system performs its safety function. No new accident initiators, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of this change.

3. Involve a significant reduction in a margin of safety.

The proposed change does not alter the manner in which safety limits or limiting safety system settings are determined. The proposed change will have no effect on those plant systems necessary to assure the accomplishment of protection functions and meet the accident analysis acceptance criteria in FSAR Chapter 15. There will be no impact on DNBR limits, F_0 , F -delta-H, Loss of Coolant Accident-Peak Clad Temperature, or any other defined safety margin.

The Bases of Technical Specification 3/4.3.1 are not changed since the ability of the Reactor Protection System, with its attendant diversity to ensure the subcriticality function, is not compromised. While some minor uncertainty could be postulated to apply to the manual reactor trip switch contacts and control room wiring to the reactor trip switchgear, this is insignificant when one considers the impact of this portion of the circuitry on the overall reactor protection system reliability.

Based upon the preceding information, it has been determined that the proposed change to the Technical Specifications does not involve a significant increase in the probability or consequences of an accident previously evaluated, create the possibility of a new or different kind of accident from any accident previously evaluated, or involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed change meets the requirements of 10CFR50.92(c) and does not involve a significant hazards consideration.

ENVIRONMENTAL CONSIDERATION

This emergency amendment request revises Note 16 of Technical Specification Table 4.3-1 by adding the following sub-note:

"Complete verification of OPERABILITY of the manual reactor trip switch circuitry shall be performed prior to startup from the first shutdown to Mode 3 occurring after August 7, 1992."

This is needed due to a procedural shortcoming in the surveillances for the manual reactor trip switch circuitry.

The proposed amendment involves a change with respect to the surveillance requirements of facility components within the restricted area, as defined in 10CFR20. Union Electric has determined that the proposed amendment does not involve:

- (1) A significant hazard consideration, as discussed in Attachment 2 of this amendment application;
- (2) A significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or
- (3) A significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10CFR51.22(c)(9). Pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.