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UNION ELECTRIC

April 18, 1996

Donald F. Schnell
Senior Vice President
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U.S. Nuclear Regulatory Commission
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Gentlemen: ULNRC-03367

DOCKET NUMBER 50-483
CALLAWAY PLANT
RESPONSE TO GENERIC LETTER 96-01,
"TESTING OF SAFETY-RELATED LOGIC CIRCUITS"

References: 1. Generic Letter 96-01, "Testing of Safety-Related Logic Circuits," dated January 10, 1996
2. NRC letter dated March 27, 1996 from Bruce A. Boger (NRC) to Alexander Marion (NEI)

Generic Letter 96-01 (Reference 1) requested addressees to implement the actions described herein (Attachment 1), and required all addressees to submit a written response within 60 days of the date of the generic letter regarding implementation of the requested actions.

The attached provides Union Electric's 60-day response to Generic Letter 96-01. The required response was due on March 11, 1996, however Reference 2 granted an extension to April 19, 1996.

Should you have any questions or need additional information concerning this matter please contact us.

Very truly yours,

Donald F. Schnell

Donald F. Schnell

JMC/mlo
Attachment

A047

STATE OF MISSOURI)
) S S
CITY OF ST. LOUIS)

Donald F. Schnell, of lawful age, being first duly sworn upon oath says that he is Senior Vice President-Nuclear and an officer 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 Donald F. Schnell
Donald F. Schnell
Senior Vice President
Nuclear

SUBSCRIBED and sworn to before me this eighteenth day of April, 1996.

Barbara J. Pfaff
BARBARA J. PFAFF
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MY COMMISSION EXPIRES APRIL 22, 1997
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RESPONSE TO GENERIC LETTER 96-01
"TESTING OF SAFETY-RELATED LOGIC CIRCUITS"

INTRODUCTION

Callaway Plant is a four-loop Westinghouse Pressurized Water Reactor (PWR). The Reactor Protection System (RPS) and Engineered Safety Features (ESF) utilize the Westinghouse 7300 process system and Solid State Protection System (SSPS). Balance of Plant (BOP) Engineered Safety Features Actuation System (ESFAS) and Load Shedder and Emergency Load Sequencer (LSELS) systems were designed and provided by Consolidated Controls Corporation.

REQUESTED ACTIONS

(1) Compare electrical schematic drawings and logic diagrams for the reactor protection system, EDG load shedding and sequencing, and actuation logic for the engineered safety features systems against plant surveillance test procedures to ensure that all portions of the logic circuitry, including the parallel logic, interlocks, bypasses and inhibit circuits, are adequately covered in the surveillance procedures to fulfill the Technical Specification (TS) requirements. This review should also include relay contacts, control switches, and other relevant electrical components within these systems, utilized in the logic circuits performing a safety function.

(2) Modify the surveillance procedures as necessary for complete testing to comply with the technical specifications. Additionally, the licensee may request an amendment to the technical specifications if relief from certain testing requirements can be justified.

REQUIRED RESPONSE

(1) Within 60 days of the date of this generic letter, a written response indicating whether or not the addressee will implement the actions requested above. If the addressee intends to implement the requested actions, submit a schedule for completing implementation. If an addressee chooses not to take the requested actions, submit a description of any alternative course of action, the

schedule for completing the alternative course of action (if applicable), and the safety basis for determining the acceptability of the planned alternative course of action. (2) Within 30 days of completion of the requested actions, a response confirming completion.

UNION ELECTRIC RESPONSE

Union Electric intends to implement the requested actions for logic system testing as discussed and clarified below:

Schedule:

The requested completion of these actions is by startup following the first refueling outage commencing after January 10, 1997. This correlates to Refuel 9 in the spring of 1998 for Callaway Plant. Based on the similarity of surveillance procedures discussed above, it is Union Electric's intent to complete the actions of this Generic Letter consistent with startup from the refueling outage in the spring of 1998. This schedule provides for an orderly and efficient review of surveillance procedures in conjunction with the implementation activities of the Improved Technical Specifications (ITS), which are scheduled to be complete in the fall of 1997. Reviews not inherently completed as a result of ITS implementation will also be completed by the spring of 1998. A letter confirming completion of this effort will be submitted in accordance with item (2) within 30 days of the completion of the reviews.

Scope:

Surveillance requirements for the reactor protection system, EDG load shedding and sequencing, and actuation logic for the engineered safety features systems are currently contained in Technical Specification Sections 3.3.1, 3.8.1.1, and 3.3.2, respectively. For the RPS and ESF logics, current Technical Specification required testing is specified in Tables 4.3-1 and 4.3-2 and defined as ACTUATION LOGIC TEST, TRIP ACTUATING DEVICE OPERATIONAL TEST, MASTER RELAY TEST, AND SLAVE RELAY TEST. EDG load shedding and sequencing testing requirments in current Technical Specifications are defined by Surveillance Requirements 4.8.1.1.2f.4), 4.8.1.1.2f.5), 4.8.1.1.2f.6), 4.8.1.1.2f.7), 4.8.1.1.2f.9) 4.8.1.1.2f.10), and 4.8.1.1.2f.12). Union Electric intends to perform reviews of logic testing to the equivalent sections of the ITS.

Conversion to Standard Technical Specifications:

Union Electric is in the process of converting to the Improved Technical Specifications (ITS) with a submittal planned for late 1996. Per the guidance provided at the March 19, 1996 NEI Workshop, and documented in Reference 2, all reviews will be based on the ITS. In the event the submittal date for the Technical Specification Conversion Amendment is delayed beyond January 10, 1997 the review will still be based on the ITS. Differences between the current Callaway TS and ITS should be minimal because Callaway has implemented a TS relocation based on criteria contained in 10CFR50.36(c)(2)(ii).

Identical Safety Trains:

The systems and components within the scope of this Generic Letter are typically identical redundant trains and therefore use essentially identical, but separate procedures for the individual train. It is Union Electric's intent to group these similar procedures and to perform a review of the procedures for one train. If there are differences between the trains, these differences, as a mimimum will be reviewed in the applicable procedures. If deficiencies are noted in the reviewed procedure, then the remainder of the procedures in that group will be reviewed for existence of that deficiency and revised as needed to comply with the Technical Specifications. This is consistent with the response to workshop question #11.

Credit for Previous Review Efforts:

Callaway Plant's Technical Specifications (based on NRC Standard Technical Specifications Revision 4) were used to develop the current surveillance procedures. Development of these procedures which took place in the early 1980s to support licensing of the plant, took advantage of industry operating experience available at the time. Since that time, relevant industry operating experiences have been incorporated in procedure revisions. A number of Union Electric personnel originally involved in surveillance procedure development and use are available to review the scope and philosophy used in the current procedures. At this time, Union Electric believes that the following areas have been adequately reviewed in accordance with the intent of the Generic Letter:

- Westinghouse 7300 Process Instrument Loops: Although only the bistable inputs to the SSPS are within the scope of the Generic Letter (Workshop Questions #12, #20), the entire process loops have been confirmed to be adequately tested. The design and testing methodology have been well developed and documented by Westinghouse and are described in FSAR Sections 7.2.1.1 and 7.3.8.1. The FSAR, vendor technical manuals and schematics, and site specific interconnect drawings were used to develop the surveillance procedures. Actuation of the bistables and inputs to the SSPS are confirmed by the surveillance procedures.

- Westinghouse SSPS: The design of the SSPS includes semiautomatic testing of the logic. The design and testing methodology have been well developed and documented by Westinghouse and are described in FSAR Sections 7.2.1.1 and 7.3.8.1. The FSAR, vendor technical manuals and schematics, and site specific interconnect drawings were used to develop the surveillance procedures. The procedures for logic tests overlap the 7300 process instrument tests and test through the master relays and coil continuity of the slave relays.

- Westinghouse Slave Relays: These relays are designed with a test feature to individually actuate the relays. The design and testing methodology have been well developed and documented by Westinghouse and are described in FSAR Sections 7.3.8.1. The FSAR, vendor technical manuals and schematics, and site specific drawings were used extensively to develop the surveillance procedures. In addition, Information Notice 88-83 "Inadequate Testing of Relay Contacts in Safety - Related Logic Circuits," was reviewed for applicability to Callaway Plant's test procedures with no discrepancies noted. The procedures for slave relay tests actuate the testable actuation devices to the extent possible and use contact continuity for the remaining testable actuation devices.

- LSELS and BOP ESFAS: The design of these systems includes an automatic testing feature (ATI) which tests all internal logic combinations on a continuous basis. The design and testing methodology have been well developed and tested by Consolidated Controls Corporation. The ATI tables in the vendor technical manuals for these systems show that all logic combinations, including sequence timing, are tested. This testing overlaps other calibration and integrated test procedures.

If additional portions of the reviews within the scope of the Generic Letter are later identified to have already been performed consistent with the Generic Letter intent, the response due within 30 days of completion of the requested actions will provide the appropriate discussion.