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W3F1-2009-0047

September 3, 2009

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: NRC Special Inspection Reportability Position Papers
Waterford Steam Electric Station, Unit 3 (Waterford 3)
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

During the week of July 20, 2009, a special Nuclear Regulatory Commission (NRC) inspection was held on the recent Waterford 3 Tyco Relay failures. During that inspection week, Waterford 3 presented position papers associated with 10CFR21 reportability. The Waterford 3 10CFR21 position was first presented when addressing station battery degradation. The generic information from the battery 10CFR21 position paper was used to generate two other position papers related to specific Tyco relay failures. Attachment 1 contains the CR-WF3-2008-2431 battery reportability position paper. Attachment 2 contains the CR-WF3-2007-2961 Tyco E7000 Series Relays Date Code 9948 position paper. Attachment 3 contains the CR-WF3-2008-4765 and CR-WF3-2008-4304 Tyco E7000 Series Relays Date Code 0804 position paper.

This letter contains no new commitments. Please contact licensing manager Robert J. Murillo at (504) 739-6715 if you have questions regarding this information.

Sincerely,

W. Stetz For R. Murillo

RJM/WJS/ssf

Attachments:
Attachment 1 CR-WF3-2008-2431 Battery 10CFR21 Reportability Position Paper
Attachment 2 CR-WF3-2007-2961 Tyco E7000 Series Relays Date Code 9948 Position Paper
Attachment 3 CR-WF3-2008-4765 and CR-WF3-2008-4304 Tyco E7000 Series Relays Date Code 0804 Position Paper

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Attachment 1

W3F1-2009-0047

CR-WF3-2008-2431 Battery 10CFR21 Position Paper

1.0 Description of Issue

The NRC Senior Resident communicated to the Waterford 3 Manager, Licensing on June 10, 2009, the NRC is considering issuing a Cited Severity Level IV violation to Waterford 3 for failure to report pursuant to 10CFR21 the condition documented in Condition Report CR-WF3-2008-2431 regarding the safety related B battery. This NRC communication was documented in Condition Report CR-WF3-2009-1281.

The B battery was installed in the plant in October 1992 and remained installed in the plant until Refuel 15 in May 2008 wherein the B battery was disconnected from the bus to perform the discharge test and equalizing charge.

On May 16, 2008, a performance test of the now disconnected B Station Battery was performed, and the test indicated that the battery capacity was 86.25% of the manufacturer's rating. On May 22, 2008, a second performance test of the B Station Battery was performed, and the test indicated that the battery capacity was 71.67% of the manufacturer's rating. According to the Typical Lead-Acid Battery Life Curve in the EPRI Station Battery Guide, the battery is expected to be greater than 85% for 17-18 years, whereas the B battery reached approximately 85% of its rated capacity at about 15.5 years. The most probable cause for the battery not meeting the manufacturer's service life was impurities introduced during the manufacturing process. The lower battery capacity result of the second discharge test was determined to be due to deep cycling the battery at the end of the battery's effective life. The RCA stated the cause as probable because the B Station Battery was not kept for additional testing to validate the most probable cause was not possible.

As discussed below, Waterford 3 concluded in Condition Report CR-WF3-2009-1281 that the condition did not constitute a "substantial safety hazard" and therefore the condition was not reported to the NRC.

Waterford 3 had further discussions with the NRC, and Waterford 3 understands the following additional information regarding the NRC viewpoints on the matter.

- The NRC agrees the B battery was operable and functional while the B battery was in service.
- The NRC agrees the condition is not reportable under the criteria of 10CFR 50.72 and 10CFR 50.73.
- The NRC believes the condition appears to be reportable under 10CFR Part 21 because the condition constitutes a defect, is of generic interest, and has safety significance. A specific citing communicated by the NRC in support of this position is NUREG 0302, Revision 1, Response to Question 2, page 21.3(k)-1.

In its entirety, the Response to Question 2 of Definitions, Substantial Safety Hazard in NUREG 0302 states the following:

"2. Are defects in redundant components reportable under Part 21?"

Response

"A deviation (i.e., a departure from a procurement document specification) which, based upon an evaluation, causes or could cause the failure of a redundant basic component is a reportable defect under Part 21. The loss of safety function of a basic component is considered a major reduction in the degree of protection provided to the public health and safety. It is possible that the defect might also exist in the redundant basic component which could result in a loss of safety function. The existence of a defective basic component, considering a single failure of its counterpart redundant basic component, could result in loss of safety function. Actually, the counterpart component need not fail. It could be removed from service for other reasons such as routine maintenance or inspection."

2.0 Fundamental Facts

The following are fundamental facts that are key to the determination of whether the condition is reportable pursuant to 10CFR21.

As documented in the RCA, the A and A/B batteries were manufactured in a different lot than the B battery. Capacity testing performed on batteries A and A/B during Refuel 15 in 2008 demonstrated that their performance continued to trend above the rated performance curve for the batteries. Accordingly:

- The A, B and A/B batteries were operable and functional while in service and were able to perform their safety functions.
- The A and A/B batteries did not prematurely degrade in a manner similar to the B battery.
- There was no common cause condition identified that would have precluded the batteries from performing their intended safety function.

The B battery, while installed in the plant, remained able to perform its safety function. At Waterford 3, the battery must be disconnected from the bus to perform the discharge test and equalizing charge. As such, the B battery was not installed in the plant for the performance discharge test on May 16, 2008, and remained uninstalled until replaced with a new battery bank on May 28, 2008. Thus, the minimum battery capacity observed with the B battery in service was 86.25%.

The B battery condition did not result in a violation of Technical Specifications.

3.0 Waterford 3 Position

This evaluation establishes, based on objective evidence, the following conclusions:

Reporting is Evaluated and Performed Under 10CFR 50.72 and 10CFR 50.73
The reporting requirements for licensees for 10CFR Part 21 are determined, evaluated, and satisfied based on the criteria and reporting requirements of 10CFR 50.72 and 10CFR 50.73.

Only Parts on the Shelf are Reportable Under Part 21
The only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under 10CFR 50.72 and 10CFR 50.73, would involve parts on the shelf.

Reporting Requirements of 10CFR 50.72 and 10CFR 50.73 Not Met
The condition does not meet the reporting requirements of 10CFR 50.72 and 10CFR 50.73.

Reporting Criteria of Part 21 Not Met
The condition does not meet the reporting criteria of Part 21.

NRC Specific NUREG 0302, Revision 1, Citing
The NRC has cited NUREG 0302, Revision 1, Response to Question 2, page 21.3(k)-1 as a justification why the condition may be reportable under Part 21 in how the single failure criterion is applied. We believe the example applies wherein a deviation causes or could cause the failure of a redundant basic component, which is not the case at Waterford 3, and the example was not intended to mean an automatic single failure must be assumed in all cases.

Regulatory Record Establishes Voluntary Reporting for Such Conditions
The regulatory record provides for reporting of conditions which represent generic interest and safety significance but which do not meet the reporting criteria of 10CFR 50.72 and 10CFR 50.73 as voluntary LERs.

The detailed evaluation for each of the foregoing conclusions is herein provided in the order stated.

3.1 Reporting is Evaluated and Performed under 10CFR 50.72 and 10CFR 50.73

The regulatory record provides substantial information that evaluation and reporting for Part 21 for licensees is performed under 10CFR 50.72 and 10CFR 50.73.

10 CFR Part 21, Section 21.2(c), states the following:

"For persons licensed to operate a nuclear power plant under Part 50 or Part 52 of this chapter, evaluation of potential defects and appropriate reporting of defects under 50.72, 50.73, or 73.71 of this chapter, satisfies each person's evaluation, notification, and reporting obligation to report defects under this part, and the responsibility of individual directors and responsible officers of these licensees to report defects under Section 206 of the Energy Reorganization Act of 1974"

NUREG 1022, Revision 2, Section 5.1.8 states the following:

"10 CFR Part 21, 'Reporting of Defects and Noncompliance,' as amended during 1991, encourages licensees of operating nuclear power plants to reduce duplicate evaluation and reporting effort by evaluating deviations in basic components under the 10 CFR 50.72, 50.73, and 73.71 reporting criteria. As indicated in 10CFR 21.2(c) 'For persons licensed to operate a nuclear power plant under Part 50 of this chapter, evaluation of potential defects and appropriate reporting of defects under 50.72, 50.73, or 73.71 of this chapter satisfies each person's evaluation, notification, and reporting obligation to report defects under this part...."

"For an LER, if the defect meets one of the criteria under 10 CFR 50.73, check the applicable paragraph in Item 11 of NRC Form 366 (LER Form). Licensees are also encouraged to check the 'Other' block and indicate 'Part 21' in the space immediately below if the defect in a basic component could create a substantial safety hazard. The wording in Item 16 ('Abstract') and Item 17 ('Text') should state that the report constitutes a Part 21 notification."

The Statements of Consideration in Federal Register 56FR36081, dated July 31, 1991, provide further collaboration, as follows:

"Operating license holders can reduce duplicate evaluation and reporting effort by evaluating deviations in basic components installed in operating plants which produce events which could meet the criteria of Sections 50.72 and 50.73. If the evaluation of events using the criteria of Sections 50.72 or 50.73 results in a finding that the event is reportable and the event is reported via these sections, then as indicated in Section 21.2(c), the evaluation, notification, recordkeeping, and reporting obligations of part 21 are met. If the event is determined not to be reportable under §§ 50.72 or 50.73, then the obligations of part 21 are met by the evaluation."

"As stated in Section 21.2(c), the evaluation of the deviation in a basic component which causes an event which is evaluated using criteria of either Sections 50.72 or 50.73, satisfies the required evaluation and reporting requirements of part 21. Thus, to the extent possible by changing part 21, Section 21.2(c) would explicitly relieve the officers

and directors of holders of operating licenses under part 50 from the part 21 evaluation, notification, and reporting requirements if potential defects which produce events are evaluated and defects are reported under Sections 50.72 and 50.73. The reporting requirements associated with sections 50.72 and 50.73 would be deemed to satisfy the corresponding requirements of part 21."

"The defect reporting requirements of section 206 of the Energy Reorganization Act as amended would be met by part 50 operating licensees, for defects which produce reportable events, by reporting under appropriate paragraphs of sections 50.72 and 50.73."

These statements establish that operating license holders report substantial safety hazards under 10CFR 50.72 and 10CFR 50.73. An important distinction made in the regulatory record is that evaluation using the criteria of 10CFR 50.72 and 10CFR 50.73 satisfies the required evaluation and reporting requirements of Part 21. Of the utmost importance is the statement in the Statements of Considerations that if the event is determined not to be reportable under §§ 50.72 or 50.73, then the obligations of part 21 are met by the evaluation.

3.2 Only Parts on the Shelf are Reportable under Part 21

The only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under 10CFR 50.72 and 10CFR 50.73, would involve parts on the shelf.

NUREG 1022, Revision 2, in Section 5.1.8 states the following:

"As discussed in the Statement of Consideration for 10 CFR 21[18], the only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under 50.72, 50.73, or 73.71 would involve Part(s) on the shelf. This type of defect, if it does not represent a condition reportable under 50.72 or 50.73, might still represent a condition reportable under 10 CFR Part 21"

The Statement of Consideration in Federal Register 56FR36081, dated July 31, 1991, provide further collaboration, as follows:

"Thus, one category of defects which will still be reported by power plant operating license holders under part 21 rather than Sections 50.72 and 50.73 are those defects discovered by licensees in equipment which has never been installed or used in the nuclear plant. Defects in these basic components cannot create situations which are reportable under Sections 50.72 or 50.73 since these components cannot create a reportable event or condition. Basic components which are delivered and accepted by the purchaser but are not installed in the plant should be evaluated under part 21 and reported under part 21 if found to be reportable."

The regulatory record clearly documents by singular exception the only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under 10CFR 50.72 and 10CFR 50.73, would involve parts on the shelf. The regulatory record points out that one category of defects that will still be reported by licensees under Part 21, rather than 10CFR 50.72 and 10CFR 50.73, is those defects in equipment which has never been installed or used in the plant. By establishing exception of Part 21 to one category of equipment, clearly there is no intent to apply Part 21 to equipment installed in service.

3.3 Reporting Requirements of 10CFR 50.72 and 10CFR 50.73 Not Met

The condition does not meet the reporting requirements of 10CFR 50.72 and 10CFR 50.73.

The determination of whether an event or condition is reportable is predicated on whether the event or condition could have prevented fulfillment of a safety function. This predication is substantiated by 10 CFR 50.72 and 10 CFR 50.73 and NUREG 1022, Revision 2.

10 CFR 50.73(a)(2)(vi) states the following:

"Events covered in paragraph (a)(2)(v) of this section may include one or more procedural personnel errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function."

NUREG 1022, Section 3.2.7, Revision 2, states the following:

"In determining the reportability of an event or condition that affects a system, it is not necessary to assume an additional random single failure in that system; however, it is necessary to consider other existing plant conditions. (See example [4] below)."

"The licensee may also use engineering judgment to decide when personnel actions could have prevented fulfillment of a safety function. For example, when an individual improperly operates or maintains a component, he might conceivably have made the same error for all of the functionally redundant components (e.g., if he incorrectly calibrates one bistable amplifier in the Reactor Protection System, he could conceivably incorrectly calibrate all bistable amplifiers). However, for an event to be reportable it is necessary that the actions actually affect or involve components in more than one train or channel of a system, and the result of the actions must be undesirable from the perspective of protecting the health and safety of the public."

"The following types of events or conditions generally are not reportable under these criteria:

- Independent failure of a single component (unless it is indicative of a generic problem, which alone could have caused failure of a redundant safety system"

"As indicated in Paragraph 50.73(a)(2)(vi) '...individual component failures need not be reported pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function.'"

"A design or analysis defect or deviation is reportable under this criterion if it could have prevented fulfillment of the safety function of structures or systems defined in the rules. Reportability of a design or analysis defect or deviation under this criterion should be judged on the same basis that is used for other conditions, such as operator errors and equipment failures. That is, the condition is reportable if there is a reasonable expectation of preventing fulfillment of the safety function. Alternatively stated, the condition is reportable if there was reasonable doubt that the safety function would have been fulfilled if the structure or system had been called upon to perform it."

The regulatory record clearly establishes a condition is not reportable if the safety function could be fulfilled (batteries A, B, and A/B were operable and functional to perform their intended safety function), redundant equipment was available, and that an additional single failure need not be postulated (there was no common cause).

3.4 10 C.F.R. Part 21 Elements

The evaluation herein will establish that, although reporting and evaluation for the condition by regulation and the regulatory record is vested in 10CFR 50.72 and 10CFR 50.73, as a matter of discussion only, the condition does not meet the criteria for reporting under 10CFR Part 21.

3.4.1 Key Components of Regulation

Part 21 of Title 10 of the Code of Federal Regulations requires, in part that:

"....any individual director or responsible officer of a firm constructing, owning, operating or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended, or the Energy Reorganization Act of 1974, who obtains information reasonably indicating:

(a) That the facility, activity or <u>basic component</u> supplied to such facility or activity <u>fails to comply with</u> the Atomic Energy Act of 1954, as amended, or any applicable rule,

regulation, order, or license of the Commission relating to substantial safety hazards or

(b) that the facility, activity, or basic component supplied to such facility or activity contains defects, which could create a substantial safety hazard, to immediately notify the Commission of such failure to comply or such defect, unless he has actual knowledge that the Commission has been adequately informed of such defect or failure to comply."

The key components of a Part 21 analysis are (1) whether the basic component fails to comply with a regulation, order or license and more importantly, (2) whether a defect exists, and (3) whether the defect in the basic component could create a substantial safety hazard.

Substantial Safety Hazard is defined in 10 CFR 21 as follows:

"Substantial Safety Hazard means a loss of safety function to the extent that there is a major reduction in the degree of protection provided to the public health and safety for any facility or activity licensed or otherwise approved or regulated by the NRC, other than for export, under parts 30, 40, 50, 52, 60, 61, 63, 70, 71, or 72 of this chapter."

The key components of the definition for Substantial Safety Hazard are 'loss of safety function" and "major reduction".

Each of these key components is discussed in the following sections.

3.4.2 Basic Component Evaluation

A basic component is defined in Part 21.3(1)(i) as, "...a structure, system, or component, or part thereof that affects its safety function necessary to assure:

(A) The integrity of the reactor coolant pressure boundary;

(B) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(C) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in § 50.34(a)(1), § 50.67(b)(2), or § 100.11 of this chapter, as applicable.

(ii) Basic components are items designed and manufactured under a quality assurance program complying with appendix B to part 50 of this chapter, or commercial grade items which have successfully completed the dedication process.

The B battery is required to supply a source of electrical power during a loss of AC power, and is necessary to start the B Emergency Diesel Generator. The B battery was designed and manufactured under C&D Technology's quality assurance program

complying with appendix B to part 50. Accordingly, the B battery is considered a basic component.

3.4.3 Failure to Comply with License Evaluation

The Waterford 3 condition did not involve any entry into a technical specification while the B battery was in service. In fact, although the TS did not apply in Mode 5, the condition was still within the limitations of the technical specification, i.e. the B Battery capacity at the time of discovery was about 86.3%, which was above the technical specification surveillance requirement 4.8.2.1.e capacity of 80% for establishing Operability. Although the battery capacity was below the manufacturer's rating of 90% and the battery capacity dropped more than 10% from the previous performance test, there was no violation or entry into technical specifications required. In fact, technical specification surveillance requirement 4.8.2.1.f specifies that annual performance discharge test shall be given to any battery that shows signs of degradation; e.g., the battery capacity has dropped below the manufacturer's rating of 90% or the battery capacity has dropped more than 10% from the previous performance test. Further, as previously discussed, the B Battery, while in service, was operable and able to perform its safety function. Therefore there was no noncompliance with the license.

3.4.4 Defect Evaluation

Part 21 defines a defect as follows:

1) A deviation in a basic component delivered to a purchaser for use in a facility or an activity subject to the regulations in this part if, on the basis of an evaluation, the deviation could create a substantial safety hazard;

(2) The installation, use, or operation of a basic component containing a defect as defined in this section;

(3) A deviation in a portion of a facility subject to the early site permit, standard design certification, standard design approval, construction permit, combined license or manufacturing licensing requirements of part 50 or part 52 of this chapter, provided the deviation could, on the basis of an evaluation, create a substantial safety hazard and the portion of the facility containing the deviation has been offered to the purchaser for acceptance;

(4) A condition or circumstance involving a basic component that could contribute to the exceeding of a safety limit, as defined in the technical specifications of a license for operation issued under part 50 or part 52 of this chapter; or

(5) An error, omission or other circumstance in a design certification, or standard design approval that, on the basis of an evaluation, could create a substantial safety hazard.

The most probable cause for the battery not meeting the manufacturer's service life was impurities introduced during the manufacturing process. These impurities would

constitute a deviation in a basic component. However, while in service, since the B Battery was able to perform its safety function, no substantial safety hazard was created. The minimum battery capacity observed with the B battery in service was 86.25%. An engineering evaluation also concluded that no substantial safety hazard could have been created. Accordingly, the deviation is not considered a defect.

3.4.5 Substantial Safety Hazard Evaluation

As stated in the Part 21 definition of "substantial safety hazard" one of the key components in the definition is that there must be present a loss of or potential loss of safety function. The A, B, and A/B batteries were operable and functional, and the battery capacities of the A, B, and A/B were in conformance with technical specifications while in service. Therefore, there was no loss of safety function.

A second key component that must be present is that there must be a "major reduction" in the degree of protection provided to the public health and safety". NUREG 0302 provides specific illustrations of what would be considered to be "major reduction in the degree of protection provided to the public health and safety" as follows:

- Exposure in excess of 25 rems, whole body (10 CFR21.403(a)(1))
- Exposure to an individual in an unrestricted area to more than 0.5 rem in one calendar year (10CFR 20.105(a))
- Release of radioactive material to an unrestricted area in excess of 500 times the limits of Appendix B, Table II, 10 CFR Part 20 (10CFR20.403(b))
- Exceeding a safety limit as defined in the facility technical specifications
- A deficiency which seriously compromised the ability of a confinement system to perform its designated function

The Waterford 3 condition did not meet any of these criteria. While in service, the B Battery was able to perform its safety function. There was no common cause condition identified that would challenge redundancy and therefore challenge fulfillment of the safety function. The B Battery condition was a condition below the threshold constituting a "loss of safety function" or "major reduction in the degree of protection provided to the public health and safety."

3.5 NRC Specific NUREG 0302, Revision 1, Citing

The NRC has cited NUREG 0302, Revision 1, Response to Question 2, page 21.3(k)-1 as a justification why the condition may be reportable under Part 21 in how the single failure criterion is applied. We believe the example applies wherein a deviation causes

or could cause the failure of a redundant basic component, which is not the case at Waterford 3, and the example was not intended to mean an automatic single failure must be assumed in all cases.

In its entirety, the paragraph states the following:

"2. Are defects in redundant components reportable under Part 21?

Response

"A deviation (i.e., a departure from a procurement document specification) which, based on an evaluation, causes or could cause the failure of a redundant basic component is a reportable defect under Part 21. The loss of safety function of a basic component is considered a major reduction in the degree of protection provided to the public health and safety. It is possible that the defect might also exist in the redundant basic component which could result in a loss of safety function. The existence of a defective basic component, considering a single failure of its counterpart redundant basic component, could result in loss of safety function. Actually, the counterpart component need not fail. It could be removed from service for other reasons such as routine maintenance or inspection."

We understand that the NRC is potentially interpreting this example to indicate that if one basic component in a redundant system configuration has degradation, a single failure must be assumed in the redundant component in evaluating whether there is a loss of safety function.

First, with respect to the Waterford 3 condition, the Batteries were operable and functional while in service. Therefore this example does not apply because there was no defect during the operating period and as such, Waterford 3 did not need to assume a single failure of the other redundant battery.

The example is cited in the context of a deviation which causes or could cause the failure of a redundant basic component. We believe the example is simply saying that if an accident analysis of record credits a redundant component in the accident analysis given a single failure, then if the initial 1 of 2 components has a defect, that defect cannot count as the single failure.
To extent the meaning of this example to apply a single failure in all cases would be contrary to the principles in the regulation and the regulatory record. First we note the NRC has provided a regulatory structure for evaluating and reporting under 10CFR 50.72 and 10CFR 50.73. These regulations as previously discussed establish a single failure on the redundant component is not automatically applied. Therefore, assuming that Part 21 requires an automatic application of a single failure to the redundant component or system would set a threshold for reporting under Part 21 lower than 10 CFR 50.72 and 10CFR 50.73. Such an interpretation would be contrary to the

principles in Part 21 which establish that reporting under Part 21 applies when there is a loss of safety function and when there is a major reduction in the degree of protection provided to the public health and safety. Also, such an interpretation, would eliminate the parity between Part 21 and 10CFR 50.72 / 10CFR 50.73 and set a new threshold for reporting under Part 21.

3.6 Other Information

Waterford 3 performed a search of NRC violations for failure of licensees to report pursuant to Part 21 since 2000, and no violations were found. We believe this finding provides indirect substantiation that license holders evaluate and report substantial safety hazards under 10CFR50.72 and 10CFR50.73 and that evaluation using the criteria of 10CFR50.72 and 10CFR50.73 satisfies the required evaluation and reporting requirements of Part 21.

Waterford 3 evaluated one Part 21 notification made by PECo July 29, 1988 as documented in NRC Information Notice IN 89-17. The Part 21 notification was for contamination and degradation of the Peach Bottom Unit 2 safety related batteries. The Part 21 notification was reviewed and as stated in the Part 21 notification, "Copper contamination represents a potential common mode failure which could render the station batteries incapable of delivering sufficient capacity to power the emergency control and power loads." The Waterford 3 condition did not involve a common mode failure and did not preclude the ability of the B Battery to perform its safety function as defined by technical specifications.

3.7 Voluntary LER

We agree with the NRC that the B Battery condition is of importance and should be shared with the industry and the NRC. Therefore, Waterford 3 plans to issue industry OE and a voluntary LER for this condition. We believer this course of action is in agreement with regulation and the regulatory record.

NUREG 1022, Revision 2, page 63, in part states:

"However, others have a need to know about potential problems that are not reportable; thus, such items may be reported as a voluntary LER."

NUREG 1022, Section 5.1.4, provides for the reporting of conditions as voluntary LERs.

4.0 Conclusion

In conclusion, we believe we have established, based on objective evidence, the following conclusions.

The reporting requirements for licensees for 10CFR Part 21 are determined, evaluated, and satisfied based on the criteria and reporting requirements of 10CFR 50.72 and 10CFR 50.73.

The only case where a defect in a basic component of an operating reactor might be reportable under Part 21, but not under 10CFR 50.72 and 10CFR 50.73, would involve parts on the shelf.

The condition does not meet the reporting requirements of 10CFR 50.72 and 10CFR 50.73.

The condition does not meet the reporting criteria of Part 21.

The NRC has cited NUREG 0302, Revision 1, Response to Question 2, page 21.3(k)-1 as a justification why the condition may be reportable under Part 21 in how the single failure criterion is applied. We believe the example applies wherein a defect causes or could cause the failure of a redundant basic component, which is not the case at Waterford 3, and the example was not intended to mean an automatic single failure must be assumed in all cases.

The regulatory record provides for reporting of conditions which represent generic interest and safety significance, but which do not meet the reporting criteria of 10CFR 50.72 and 10CFR 50.73, as voluntary LERs.

Attachment 2

W3F1-2009-0047

CR-WF3-2007-2961 Tyco E7000 Series Relays Date Code 9948 Position Paper

Condition

This condition relates to a potential 10CFR21 violation associated with CR-WF3-2007-2961. CR-WF3-2007-2961 identified on 09/05/2007 that EG EREL2342K relay contacts would not operate per design. EG EREL2342K relay is associated with the following safety related ventilation systems: Switchgear Area Air Handling Unit AH-25A and Switchgear Area Air Handling Unit AH-30A.

The CR-WF3-2007-2961 corrective action process identified a high rate of failures for Tyco (Agastat) E7000 series relays associated with a date code 9948. Appropriate corrective actions were taken to replace all date code 9948 Tyco E7000 series relays.

Regulatory Criteria

10 CFR 50.73(a)(2)(VI) states that events covered in paragraph (a)(2)(v) of this section may include one or more procedural personnel errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.

NUREG-0302 (Remarks Presented at Public Regional Meetings to Discuss Regulations for Reporting of Defects and Noncompliance) page 21.3(k)-2 question 3 states that operation in a degraded mode; that is, operations with less than the normal minimum number components operable, but within the Technical Specification (TS), has been evaluated and found acceptable. Operation in such a mode is not considered to be a substantial safety hazard as defined in Part 21.

NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73) Section 3.2.2 states that it should be assumed that the discrepancy occurred at the time of its discovery unless there is firm evidence, based on a review of relevant information such as the equipment history and the cause of failure, to indicate that the discrepancy existed previously.

Evaluation

This evaluation will first address the EG EREL2342K failure then address the cumulative affect of the additional identified failures. The cumulative affect was an item of interest during the NRC special inspection.

Relays EG EREL2342K (identified as serial number 99480084) and EG EREL2392L (identified as serial number 99480086) were sent to Tyco Electronics for failure analysis. The EG EREL2342K and EG EREL2392L failure was most likely caused by poor continuity of the normally closed contacts when voltage was removed from the

relay's coils. There were no indication of binding or rubbing that would have restricted movement of the coil tube within the magnetic core for either relay.

Relay EG EREL2342K was installed on 03/17/2000 and failed on 09/05/2007 (+7 years). Relay EG EREL2342K was functionally tested every 8 weeks by operations performing surveillance procedure OP-903-094 (ESFAS Subgroup Relay Test – Operating). The last OP-903-094 performance was on 07/23/2007 which validated that Switchgear Area Air Handling Unit AH-25A and Switchgear Area Air Handling Unit AH-30A started successfully.

In accordance with NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73) Section 3.2.2, "For testing that is conducted within the surveillance interval it should be assumed that the discrepancy occurred at the time of its discovery unless there is firm evidence to indicate that the discrepancy existed previously." The EG EREL2342K relay surveillance history demonstrates that it was capable of performing it safety function multiple times and no firm evidence existed based upon relay EG EREL2342K operating history that the failure existed previously. The redundant train was available and operable when the component was identified failed. Therefore, no 10CFR50.73(a)(2)(VI) report is required.

For the cumulative affect, the most likely failure modes were as follows:

> EG EREL2342K (CR-WF3-2007-2961) failure was most likely caused by poor continuity of the normally closed contacts when voltage was removed from the relay's coils.
>
> EG EREL2392L (CR-WF3-2007-03236) failure was most likely caused by poor continuity of the normally closed contacts when voltage was removed from the relay's coils.
>
> EG EREL2392K (CR-WF3-2004-00334) failure was most likely due to coil expansion causing the coil housing to crack.
>
> EG EREL2392Q (CR-WF3-2003-03258) failure was most likely due to the cracked coil housing which caused additional frictional forces between the coil housing and plunger and spindle assembly when the relay was de-energized.

Again, each of these relays have specific post maintenance installation acceptance tests and operations surveillance tests associated with them. Based upon the NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73) Section 3.2.2 guidance, no firm evidence existed that these failures existed previously. The redundant train was available and operable when the component was identified failed. Therefore, no 10CFR50.73(a)(2)(VI) report is required.

In addition, no common manufacturing defects were identified between all the failures.

Conclusion

In conclusion, we believe we have established based on objective evidence the following conclusions.

The reporting requirements for licensees for 10CFR Part 21 are determined, evaluated, and satisfied based on the criteria and concurrent reporting requirements of 10CFR50.72 and 10CFR50.73.

The condition does not meet the reporting requirements of 10CFR 50.72 and 10CFR 50.73. The condition does not meet the reporting criteria of Part 21.

On 8/18/09, a voluntary Licensee Event Report (LER) 09-003-00 for Waterford Steam Electric Station Unit 3 was submitted. The LER provided the details associated with higher than expected failure rates of normally energized Tyco model E7024PB electro pneumatic time delay relays produced since 2008.

References

1. Entergy Position Paper, B Battery 10CFR21.
2. NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73)
3. NUREG-0302 (Remarks Presented at Public Regional Meetings to Discuss Regulations for Reporting of Defects and Noncompliance)

Attachment 3

W3F1-2009-0047

CR-WF3-2008-4765 and CR-WF3-2008-4304 Tyco E7000 Series Relays Date Code 0804 Position Paper

Condition

This condition relates to a potential 10CFR21 violation associated with the following condition reports:

On 10/13/08, CR-WF3-2008-4765 identified charging pump A failure to automatically start during performance of OP-903-094 Step 7.4.7 was due to the SIX10 relay (EG EREL2343A) contacts (1-5) failing to return to shelf state when the SIX10 coil was de-energized. Technical Specification 3.1.2.4 (charging pumps) was entered for this condition.

On 9/11/08, CR-WF3-2008-4304 identified high pressure safety injection (HPSI) pump B failure to automatically start during performance of OP-903-068 Step 7.4.18.4 was due to the SIX7 relay (EG EREL2392N) contacts (2-6) failing to return to shelf state when the SIX7 coil was de-energized.

CR-WF3-2009-01649 identified a relay that failed to change state during the pre-installation test. This relay was never installed in the plant.

Regulatory Criteria

10 CFR 50.73(a)(2)(VI) states that events covered in paragraph (a)(2)(v) of this section may include one or more procedural personnel errors, equipment failures, and/or discovery of design, analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to paragraph (a)(2)(v) of this section if redundant equipment in the same system was operable and available to perform the required safety function.

NUREG-0302 (Remarks Presented at Public Regional Meetings to Discuss Regulations for Reporting of Defects and Noncompliance) page 21.3(k)-2 question 3 states that operation in a degraded mode; that is, operations with less than the normal minimum number components operable, but within the Technical Specification (TS), has been evaluated and found acceptable. Operation in such a mode is not considered to be a substantial safety hazard as defined in Part 21.

NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73) Section 3.2.2 states that it should be assumed that the discrepancy occurred at the time of its discovery unless there is firm evidence, based on a review of relevant information such as the equipment history and the cause of failure, to indicate that the discrepancy existed previously.

Evaluation

Based upon the regulatory single failure criteria requirements (not required while complying with TSs) for each of these failed components, the redundant train was

available and operable when the component was identified failed. In addition, the HPSI pump B surveillance history demonstrates that it was capable of performing it safety function multiple times and no firm evidence exists based upon relay EG EREL2392N operating history that the failure existed previously. Thus, no 10 CFR 50.73(a)(2)(VI) report is required.

Charging pump A passed its installation post maintenance test and no firm evidence exists that relay EG EREL2343A failure existed previously. Thus, no 10 CFR 50.73(a)(2)(VI) report is required.

EG EREL2343A (Charging Pump A) **SN 08040636**	**EG EREL2392 N (HPSI B)** **SN 08040634**
8/20/08 – Installed; passed post maintenance test 10/13/08 – Failed during OP-903-094	2/27/08 – Installed; passed post maintenance test. 3/30/08 – Passed OP-903-068 5/15/08 – Passed OP-903-116 EDG B Integrated Test 5/18/08 – Passed OP-903-029 5/27/08 – Passed OP-903-011 6/9/08 – Passed OP-903-068 7/14/08 – Passed OP-903-068 9/11/08 – Failed during OP-903-068

Per Tyco correspondence (included in CR-WF3-2008-4765) the date code 0804 relay failure mechanism (EG EREL2343A and EG EREL2392N) was the result of operator error in the adjustment of the terminal blocks outside the engineering and manufacturing specifications.
Tyco correspondence also stated that no other relays of lot 0804 have been identified with these characteristics.

With the available information, no other Waterford 3 relay failures were associated with the manufacturing operator error. The opposite train systems were available when the failures were identified. Thus, no 10 CFR 50.73(a)(2)(VI) report is required.

CR-WF3-2009-01649 identified relay has been sent back to Tyco for evaluation and the evaluation is still ongoing. Thus, the failure mechanism and potential applicability can not be completed until the failure information is known.

Conclusion
We believe we have established based on objective evidence the following conclusions.

The reporting requirements for licensees for 10CFR Part 21 are determined, evaluated, and satisfied based on the criteria and concurrent reporting requirements of 10CFR 50.72 and 10CFR 50.73.

The condition does not meet the reporting requirements of 10CFR 50.72 and 10CFR 50.73. The condition does not meet the reporting criteria of Part 21.

On 8/18/09, a voluntary Licensee Event Report (LER) 09-003-00 for Waterford Steam Electric Station Unit 3 was submitted. The LER provided the details associated with higher than expected failure rates of normally energized Tyco model E7024PB electro pneumatic time delay relays produced since 2008.

References

1. Entergy Position Paper, B Battery 10CFR21.
2. NUREG-1022 (Event Reporting Guidelines 10 CFR 50.72 and 50.73)
3. NUREG-0302 (Remarks Presented at Public Regional Meetings to Discuss Regulations for Reporting of Defects and Noncompliance)