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W3F1-91-0829
A.4.05
QA

January 3, 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Technical Specification Change Request NPF-38-119

Gentlemen:

On October 11, 1991, Entergy Operations, Incorporated submitted Technical Specification Change Request NPF-38-118 (W3F191-0428) to change Waterford 3 Technical Specification Table 4.3-2, Engineered Safety Features Actuation System instrumentation Surveillance requirements. The requested changes extended surveillance frequencies for the automated actuation logic for safety injection, containment spray, containment isolation, main steam line isolation, safety injection system recirculation and emergency feedwater from monthly to quarterly for the initiation relays and to semi-annually for the subgroup actuation relays. Changes were also requested for the footnotes to reflect these extended frequencies.

In the interest of expediting an amendment extending the surveillance period for the initiation relays, Entergy requested (in W3F191-0923) the NRC to omit from their review of NPF-38-118 all changes that did not support this issue. Those changes omitted from that submittal are hereby resubmitted with this change request. The attached description and safety analysis is essentially identical with the original submittal except that it only excludes information about the initiation relay surveillance extension. As such, these changes extend the subgroup relay surveillance period, only.

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Technical Specification Change Request NPF-38-119

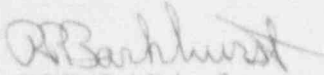
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Please direct any questions or comments to Tim Gaudet on (504) 739-6666.

Very truly yours,



RPB/DAR/ssf

Attachment

cc: R.D. Martin, NRC Region IV
D.L. Wigginton, NRC-NCR
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office
Administrator Radiation Protection Division (State of Louisiana)
American Nuclear Insurers

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of)

Entergy Operations, Incorporated)
Waterford 3 Steam Electric Station)

Docket No. 50-382

AFFIDAVIT

R.P. Barkhurst, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached Technical Specification Change Request NPF-38-119; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.



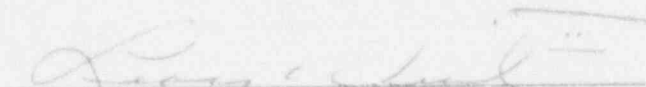
R.P. Barkhurst
Vice President Operations - Waterford 3

STATE OF LOUISIANA)

) ss

PARISH OF ST. CHARLES)

Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 5th day of January, 1992.


Notary Public

My Commission expires 12/31/92

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-38-119

This requests an amendment to change Table 4.3-2 of the Waterford 3 Technical Specifications (TS), which addresses surveillance requirements of Engineered Safety Features Actuation System (ESFAS) instrumentation. The change will extend the surveillance frequency for the automated actuation logic for safety injection, containment spray, containment isolation, main steam line isolation, safety injection system recirculation and emergency feedwater from monthly to semi-annually for the subgroup actuation relays.

Existing Specifications

See Attachment A

(Note: these corrections are based on the presently existing specifications. Amendments granted during the review process of this request may affect the final form of this amendment.)

Proposed Specifications

See Attachment B

(Note: these corrections are based on the presently existing specifications. Amendments granted during the review process of this request may affect the final form of this amendment.)

Description

This change modifies the required period for surveillance testing of the ESFAS automatic actuation logic. It extends the present monthly surveillance frequency identified in Table 4.3-2 for safety injection, containment spray, containment isolation, main steam line isolation, safety injection recirculation and emergency feedwater to semi-annually for the subgroup relays in the automatic actuation logic. Likewise, changes are made to the footnotes to reflect this extended frequency.

The surveillances for the subgroup actuation relays are done on a staggered test interval (i.e., surveillances are performed on the train opposite to that tested in the previous surveillance). As such, it will take two months to test both subgroup relay trains under the present monthly surveillance frequency. By extending this frequency to once every six months, each relay will be tested annually. Justification to extend these surveillance frequencies is based on the reliability of these relays and the overtesting of other plant components resulting from these surveillances. Justification for this is based on information contained in CEN-403, "ESFAS Subgroup Test Interval Extension." This report has been submitted to the Commission to support such a request. Based on the conclusions in this study, a twelve month relay test interval (i.e., a six month staggered surveillance interval) is justified for each of these relays.

As an outcome of the TS Improvement Program, NRC staff performed a comprehensive study of technical specification surveillance requirements (as recommended in NUREG 1024, "Technical Specifications - Enhancing the Safety Impact.") Results of this work are presented in NUREG 1366. This study examined individual types of components for failure history and the consequences of testing. This examination was based on three of five recommendations stated in NUREG 1024. These are summarized as follows:

- Recommendation 1: Frequencies should be reviewed to assure they are adequately supported on a technical basis and risk to the public is minimized.
- Recommendation 2: Surveillance tests should be reviewed to assure safety equipment is not degraded as a result of testing. Testing should be performed in a safe manner, and in the appropriate MODE.
- Recommendation 4: Requirements should be reviewed to assure no unnecessary consumption of plant personnel time or undue radiation exposure.

These led to four criteria in NUREG 1366 used to judge what surveillance requirements would be suitable for extension. These criteria were further developed in CEN-403 Section 4.2, ESFAS Subgroup Relay Test Interval Extension, to justify extending the subgroup relay testing interval.

- ° Criterion 1 Extension of the surveillance interval is warranted if a large disparity exists between the number of tests performed and the number of failures revealed.
- ° Criterion 2 Extension of the surveillance interval should not significantly increase the unavailability of a system to perform its safety function.
- ° Criterion 3 Extension of the surveillance interval may be warranted if it is causing unnecessary wear to other plant equipment.
- ° Criterion 4 The surveillance should not lead to plant transients.

An exception to the application of this analysis to Waterford 3 is the discussion regarding the overtesting of the diesel generators and its relevance to Criterion 3. To minimize emergency diesel generator (EDG) starts, Entergy Operations has recently been granted an amendment to the Waterford 3 TSs to allow the combination of EDG operability testing with ESFAS testing such that surveillances can be performed concurrently, producing only one diesel generator start. This eliminated unnecessary starts that occurred when these surveillances were performed individually. Regardless, Criterion 3 still has limited application since these ESFAS surveillances still result in unnecessary actuation of other safety related equipment such as high pressure safety injection pumps. Although this may not be as harsh to the equipment as an EDG start can be, cycling this equipment can still result in unnecessary wear.

Criterion 1 requires the surveillance to detect the failures it is intended to, and do so within a reasonable ratio to the number of surveillances performed. This test does perform its function since, as shown in CEN-403, it detected twenty-five failed relays at CE plants. However, it took approximately 157,000 relay tests to identify the twenty-five failures. This gives an average of one failed relay being discovered per 6280 tests. Normalized to a twelve month interval, a failure would have been detected every 751 tests. Similarly, on an eighteen month interval, a failure would be detected every 500 tests. Consequently, such frequent testing is unnecessary. Given the proven ineffectiveness of a shorter monthly interval and that the failure will be detected regardless of test interval size, a twelve month interval is warranted. An annual relay testing frequency satisfies Criterion 1.

Criterion 2 addresses system unavailability. Extending the surveillance frequency from monthly to semi-annually (meaning the relay test frequency from bimonthly to annually) will increase the time a failed relay could go undetected by ten months. This could make the system potentially unavailable during this period. However, an analysis of the failure history for the CE plants in CEN-403 sufficiently addresses this concern. Based on this, a semi-annual surveillance frequency (i.e., an annual relay test interval) satisfies the requirements of Criterion 2.

Criterion 4 discusses plant transients or potential plant transients resulting from testing. Due to the serious consequences, it is undesirable to have any inadvertent ESFAS actuations. CEN-403 discusses three instances of plant transients or possible plant transients resulting from surveillance testing. These are as follows:

- San Onofre Unit 2, January 16, 1984: The subgroup relay test resulted in a train A containment purge isolation signal. All containment purge isolation system valves actuated.
- Palo Verde Unit 2, March 25, 1986: While in Mode 4, a main steam isolation system actuation occurred on both trains A and B. This was attributed to a personnel error. During the subject surveillance test, the relay test switch was turned to the next selection before the previous relays were reset.
- Waterford 3, July 28, 1989: While performing a subgroup relay test, it was discovered that the surveillance could result in water hammer in the steam generator blowdown lines. The ESFAS test procedure was revised.

Since reducing the testing (and therefore increasing the surveillance interval) will decrease the probability of plant transients, this satisfies the requirements of Criterion 4.

As discussed in the CE reports, the wear on plant equipment, the low failure rate, the little to no resulting increase in system unavailability, and a reduction in the potential for plant transients all warrant the extension of the surveillance intervals. Operating experience has demonstrated the present intervals to be excessively short. Lengthening this surveillance test interval may slightly increase the probability of equipment not automatically actuating when required, but it will also decrease the number of cycles of plant equipment due to testing. Overall, reducing the testing and therefore increasing the surveillance interval will decrease the probability of plant transients.

Based on the above arguments, Waterford 3 requests to be allowed to test each ESFAS subgroup relay on an annual cycle rather than the current bimonthly cycle.

As previously mentioned, Waterford 3 TSs were recently amended to allow the combination of EDG operability testing with ESFAS testing such that surveillances could be performed concurrently, producing only one diesel generator start. Amendment 67 was issued to the technical specifications removing the requirement for staggered test intervals for three relays while retaining their test frequencies (see Footnote 6 of Table 4.3-2, Attachment B). This was necessary due to incompatible frequencies of the EDG and ESFAS tests. With a new, extended period for the ESFAS relays, frequencies of the two tests are now compatible and coincident testing of the EDGs and the relays can be performed on a staggered test basis. Therefore, this submittal also requests the deletion of the exclusion from the staggered test interval for relays K110, K410, and K412 (i.e., the removal of Footnote 6 from Table 4.3-2, and the return of Footnote 1 to the channel functional test for the Safety Injection [SIAS] automatic actuation logic.)

Safety Analysis

The proposed changes described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will the operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequence of any accident previously evaluated?

Response: No

Combustion Engineering analyses show that a reduction in test frequency of these relays is expected to decrease the frequency of spurious actuations of emergency safety features equipment. While there may be a small increase in unavailability due to relays failing during the longer surveillance interval, it is believed to be negligible due to the high reliability of these relays. Furthermore, this will be offset by a larger decrease in the inadvertent actuation of equipment during testing. As such, the overall result will be a reduction in the probability of plant transients. Reestablishing a staggered test interval for relays K110, K410 and K412 will not affect this probability, at all. Therefore, the operation of Waterford 3 in accordance with these changes will not increase the probability of any accident previously evaluated.

The proposed changes do not involve an increase in the consequences of an accident previously evaluated as the accident analysis assumes the most limiting single failure. The limiting single failure assumed bounds the failure of these relays. Whatever the failure mode of the particular relay, the consequences are acceptable. Therefore, the operation of Waterford 3 in accordance with this change will not involve a significant increase in the probability or consequence of any accident previously evaluated.

2. Will the operation of the facility in accordance with these proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

Failure modes for the subgroup relays remain unchanged by the extended test frequency and the reestablishment of staggered testing for the relays identified above. The potential consequences of a failure of one of these relays are already considered in the accident analyses. Other than the extension of test intervals and the reestablishment of the staggered test requirement for some relays, there is no change to plant procedures or operation that could lead to such a new event. Failure of a single relay may result in certain ESFAS equipment failing to actuate, but due to the plant configuration, this will not affect more than one train. As such, operation of Waterford 3 in accordance with this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will the operation of the facility in accordance with these proposed changes involve a significant reduction in the margin of safety?

Response: No

The proposed changes will not affect the performance of the safety function for the actuated equipment. Integrity of the fission product barriers is maintained by the action of the actuated equipment. Since there is no increase in the consequences of the events against which this equipment protects, there is no change in the margin of safety. There are redundant trains of all engineered safety features equipment, and thus redundant trains of all subgroup relays. Therefore, the single failure of any subgroup relay will not prevent the performance of the design safety function. The failure of two trains of redundant relays actuating the same equipment is not considered credible. Therefore, the operation of Waterford 3 in accordance with this change will not involve a significant reduction in the margin of safety.

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10 CFR 50.92; and (2) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (3) this action will not result in a condition that significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

NPF-38-119

ATTACHMENT A