



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

January 30, 1991

Dr. Thomas E. Murley, Director
Office Of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attn: Document Control Desk

Subject: Zion Station Units 1 and 2
Request for NRR Waiver of Compliance and
Emergency Technical Specification Amendment to
Facility Operating Licenses DFR-39 and DPR-48
Containment Type C Leak Rate Testing
NRC Docket Nos. 50-295 and 50-304

Dear Dr. Murley:

The purpose of this letter is to confirm the results of a teleconference between Commonwealth Edison Company (CECo) and the NRC Staff on January 29, 1991, in which CECo requested a NRR Temporary Waiver of Compliance from Technical Specification 3.10.1, and Zion Station's Confirmatory Order Item A.3, dated February 29, 1980. This letter also provides a proposed Technical Specification amendment to temporarily exclude one Unit 1 and two Unit 2 containment pathways from the requirement to perform Type C leak testing in accordance with 10CFR 50 Appendix J.

The basis for the Temporary Waiver of Compliance was discussed with members of the Nuclear Reactor Regulation and Region III staffs during the January 29, 1991 teleconference. At that time, verbal approval of this request was granted contingent upon completion of the following actions:

- Submit the formal request for Waiver by close of business on January 30, 1991;
- Submit an emergency Technical Specification amendment to formalize the exclusion from Appendix J testing;
- Participate in a Management Meeting at NRR offices during the week of February 4, 1991 to discuss these requests.

During the teleconference, it was agreed that the Temporary Waiver would be applicable until February 15, 1991 and based upon the outcome of the Management Meeting. NRC Staff would rule upon the adequacy of the Technical Specification amendment. If NRC approval of the Technical Specification amendment is not received by 24:00 hours on February 15, 1991, the units will be placed in the appropriate modes in accordance with the applicable Limiting Conditions for Operation action statements.

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Attachment A provides a discussion of the overall basis for the request (waiver and amendment) as well as the determination of No Significant Hazards Consideration and Environmental Assessment. Attachment B provides a summary of the changes to the Technical Specifications as well as typed copies of the affected Technical Specification pages. Finally, Attachment C provides additional information and drawings to assist in the NRC Staff's review of this request.

This request for a NRR Waiver of Compliance and Emergency Technical Specification Amendment has been reviewed and approved by Commonwealth Edison Senior Management, as well as On-site and Off-site Review in accordance with Commonwealth Edison procedures.

As required by 10 CFR 50.91, the State of Illinois is being notified of the amendment request by transmittal of a copy of this letter and its attachments.

Please direct any questions or comments regarding this matter to this office.

Very truly yours,



S.F. Stimac
Nuclear Licensing Administrator

Attachments

cc: Regional Administrator - Region III
J. Zwolinski - NRR
C. Patel - NRR
Senior Resident Inspector - Zion
M. Parker-IDNS

ATTACHMENT A
JUSTIFICATION FOR WAIVER OF COMPLIANCE
AND
EMERGENCY TECHNICAL SPECIFICATION AMENDMENT

1. THE REQUIREMENTS FOR WHICH THE NRR WAIVER OF COMPLIANCE AND EMERGENCY TECHNICAL SPECIFICATION AMENDMENT IS REQUESTED

Zion Station Technical Specification Surveillance Requirement 4.10.1.A.2 requires Type B and C leak tests (except air lock tests) to be performed in accordance with the provisions of 10CFR 50 Appendix J. Confirmatory Order item A.3 requires the performance of local leak rate testing on containment isolation valves that are not:

- 1) continuously pressurized by the penetration pressurization system, or
- 2) those valves which, under post-accident containment isolation conditions, are expected to be maintained continually at a pressure equal to or greater than the containment post-accident pressure. This includes valves under isolation valve seal water and those in systems required for post accident service if such systems operate at pressures above post-accident pressure.

Commonwealth Edison Company (CECo) is requesting an NRR Temporary Waiver of Compliance from the Technical Specification and Confirmatory Order requirements on Unit 2 and an NRR Temporary Waiver of Compliance for only the Confirmatory Order requirements on Unit 1 for the following containment penetrations.

Penetration P-76 - Accumulator Test Line (1/2SI020-3/4" E-R):

This pathway contains a single manual containment isolation valve (1/2SI8961) located outside of the containment. This line allows backleakage testing of the Reactor Coolant System (RCS) to Emergency Core Cooling System (ECCS) Pressure Isolation Check Valves (PIVs) and is used for specific operating evolutions (i.e. Safety Injection Pump Testing and Accumulator Level adjustments).

Penetration P-80 - Relief Valve Header To PRT (1/2RC158-4" AA-R):

This pathway contains a single check valve (1/2RC8079) located in the containment in a missile protected area. This line routes incoming relief valve discharge from Emergency Core Cooling Systems outside the containment to the pressurizer relief tank.

In addition, CECO is requesting approval of an Emergency Technical Specification amendment to exclude penetrations P-76 (2SI020-3/4" E-R) and P-80 (2RC158-4" AA-R) for Unit 2 and P-80 (1RC158-4" AA-R) for Unit 1 from the requirements of Type C leak testing. This amendment is required to prevent the shutdown of Unit 2 and to allow the resumption of Unit 1 full power operation following completion of the current forced outage. For Unit 1, CECO will perform the required Type C leak testing on P-76 prior to return to power from the current forced outage. Attachment B contains a detailed description of the Technical Specification amendment.

2. CIRCUMSTANCES LEADING TO THE REQUEST

In the fourth quarter of 1990, CECo personnel began a self-assessment of the leak rate testing program at Zion Station. Through this self-assessment, CECo identified two containment pathways that have not been local leak rate tested in accordance with 10CFR 50 Appendix J. The pathways in question have never been Type C leak tested, nor are these pathways designed to be capable of Type C leak testing. It was originally concluded that these pathways did not directly fit the definition requiring Type C leak testing in that:

- 1) They do not provide a direct connection between the inside and outside atmospheres of the primary reactor containment under normal operation,
- 2) They are not required to close automatically upon receipt of a containment isolation signal in response to controls intended to effect containment isolation,
- 3) They are not required to operate intermittently under post accident conditions, and
- 4) They are not in main steam and feedwater piping or other systems, in the direct-cycle of a boiling water reactor, which penetrate containment.

Based on the aforementioned containment leak rate testing assessment and our current understanding of NRC's interpretation regarding 10CFR 50 Appendix J requirements, CECo has determined that type C leakage testing of these pathways is required.

The need for this Emergency Technical Specification Amendment could not have been avoided. The self-assessment of the leak rate testing program at Zion Station was a program undertaken by CECo for the purpose of determining current compliance. The penetrations in question have never been Type C leak rate tested nor does their design lend itself to this type of testing. In addition, this situation was not created by the Station's failure to make a timely application for a license amendment. The fact that these pathways had never been tested previously, and that they should have been considered within the scope of Type C leak testing was never realized prior to the performance of the above mentioned self-assessment. As such, there was no way to have predicted the need for these changes.

3. DISCUSSION OF COMPENSATORY ACTIONS

Penetration P-76 (2SI020-3/4"E-R):

The following compensatory actions apply only to Unit 2 since this penetration will be tested on Unit 1 prior to return to power from the current forced outage:

2SI8961 is locked closed under normal operation. This valve is opened intermittently for the purpose of performing periodic tests on the PIVs during unit startups and for specific operating evolutions such as to depressurize the header on a periodic basis for Safety Injection Pump testing and for making Accumulator level adjustments. There are additional barriers located outside of the containment that can be isolated to provide additional assurance of containment integrity. These barriers will be operated during the period of this waiver and technical specification amendment in accordance with the following:

- The valve downstream of 2SI8961 (2SI0004) has been taken Out of Service Closed until controls, as already applied to 2SI8961, can be implemented. In addition to being normally locked closed, the following caution statement exists in various procedures which manipulate SI8961:

"Containment Isolation Valve SI8961 is considered to be a low usage valve, thus it should only be open during the actual performance of the test. IF directed to open SI8961, THEN Local Operator shall remain at valve SI8961 while it is open and be in communication with the control room."

2SI0004 is only utilized in conjunction with 2SI8961 and these controls will be applied to its operation as well.

- The piping downstream of valve 2SI0003 will be closed with a blind flange when not in use for testing.
- A method to perform local leak rate testing of this flowpath will be pursued for Unit 2.

Penetration P-80 (1RC158-4"AA-R and 2RC158-4"AA-R):

To verify the integrity of the closed system outside containment, which serves as a redundant barrier to 1/2RC8079, the following will be performed for both Units 1 and 2:

- Accessible portions of piping and flanges from the associated relief valves located outside containment up to penetration P-80 will be visually inspected. The relief valve bonnets will also be inspected.
- The Station will attempt to verify by radiographic inspection, or other positive means, the integrity of check valve 2RC8079 internals by February 15, 1991 and the integrity of check valve 1RC8079 internals before returning to service from the current forced outage.

4. EVALUATION OF SAFETY SIGNIFICANCE AND POTENTIAL CONSEQUENCES

An evaluation of the safety significance and potential consequences of the Temporary Waiver and the proposed Technical Specification amendment was performed. The following discussion demonstrates that this proposed waiver and amendment do not create an unsafe condition nor are the potential consequences increased for reasonably postulated events during the period of interest:

Penetration P-76 (1/2SI020-3/4"E-R):

All piping connected to the penetration inside containment is seismically supported. The piping inside containment from the penetration up to and including the air operated test valves is missile protected. UFSAR Table 6.6.5-1, sheet 5 classifies this penetration as Class 4. UFSAR Section 6.6.2.1.4 states that Class 4 penetrations are associated with closed systems inside containment. The piping outside containment is seismically supported to the Holdup Tanks.

During the Type A containment leak test, this penetration consisting of two valves in series is subjected to the Type A test pressure (i.e. test AOV's and SI8961). The last Type A testing was performed on Unit 1 in March, 1988 and on Unit 2 in October, 1988. The line outside containment is connected to the Hold-up tank (HUT) and therefore any leakage would be routed to the installed waste collection system.

Additional assurance of a closed penetration will be established through implementation of the compensatory actions described in section 3 (i.e. additional barriers provided).

Penetration 80 (1RC158-4"AA-R and 2RC158-4"AA-R):

The piping outside of containment is connected to the discharge line of various ECCS valves and does not communicate directly with atmosphere outside of containment. Also, the piping outside of containment is seismically supported.

Inside containment, the four inch piping containing 1/2RC8079 is missile protected and seismically supported. Four (4) relief valve lines (from RHR pump discharge, RHR pump suction, regenerative heat exchanger, and reactor coolant pump #1 seal leakoff), which are connected inside containment to the four inch piping containing 1/2RC8079, are missile protected and seismically supported. The only line connected to the four inch line which is not missile protected and not seismically supported is associated with various valve packing leakoffs from valves inside containment.

During the Type A containment leak test, the line associated with penetration P-80 is subjected to Type A test pressure minus the elevation differences between check valve 1/2RC8079 and the PRT. However, during the Type A test, the line associated with P-80 is tested with a water seal instead of being exposed to air as could occur during a design basis LOCA, since the PRT is filled to normal level during the Type A test.

Finally, it is noted that there has never been a Type A leak test failure at Zion attributable to penetration P-80 leakage. The last test was performed on Unit 1 in March, 1988 and on Unit 2 in October, 1988.

5. A DISCUSSION WHICH JUSTIFIES THE DURATION OF THE REQUEST

The duration of the requested Unit 2 Temporary Waiver of Compliance from the Technical Specification is from the time of initial issuance (January 29, 1991) until issuance of an Emergency Technical Specification amendment addressing this situation.

The duration of the Temporary Waiver of Compliance, addressing the Confirmatory Order requirements for both Units, is from the time of issuance until the next scheduled refueling outage for each unit.

The amendment included in Attachment B requests that two pathways on Unit 2 and one pathway on Unit 1 be excluded from the Appendix J Type C leak testing requirements until the next refueling outage for each unit (Z2R12 and Z1R12, respectively). The justification for this requested duration is as follows:

- 1) The modifications, which would allow these pathways to be local leak rate tested, have not yet been designed. The station is planning to test P-76 on Unit 1 during the current forced outage and is reviewing the feasibility of testing penetration P-76 on Unit 2 in its current configuration while at power. It is not clear that modifying P-80 to allow Type C testing is consistent with Code and ECCS equipment operability requirements. Therefore, the scope of the modifications or ultimate solutions is currently indeterminate.
- 2) The Temporary Waiver of Compliance pertaining to the Confirmatory Order requirements for penetration P-76 for Unit 1 is being requested. This is because the Type C leak test that will be performed prior to start up from the present outage will involve the use of a freeze-seal on the 3/4" test line outside of containment. The test cannot be performed using existing valving because the present system was not designed with the necessary isolation and ventilation valves typically required for Type C testing. A permanent testing capability will be pursued through a modification of the Accumulator Test Line during the next refueling outage for each unit. Therefore, due to the unconventional testing mechanisms that are in progress to demonstrate containment integrity of this penetration, Commonwealth Edison requests relief from testing this line prior to every startup following a cold shutdown as required by the Confirmatory Order.

3) The following qualitative assessments of risk:

Penetration P-76 (1/2SI020-3/4"E-R):

Any leakage through the P-76 pathway would be routed to the installed waste collection system. For a release of radioactive containment atmosphere to occur through the untested P-76 pathway, the following combination of events must occur:

- 1) LOCA; AND
- 2) Leakage of at least one test AOV; AND
- 3) Leakage of SI8961 AND SI0004 (after compensatory measures on Unit 2)

-OR-

Leakage of 1 SI0003 (1PI-933 Root Valve For Unit 1) AND associated blank flange (After Compensatory Measures on Unit 2 or Associated Line Cap for Unit 1); AND

- 4) Rupture of an ECCS or Accumulator injection line upstream of the first check valve connected to the reactor coolant piping

-OR-

Back leakage past at least one ECCS check valve (PIV).

-OR-

Failure of the discharge MOV to close after discharge of an accumulator.

In accordance with Technical Specification 3.3.3.F, PIV leakage is verified to be within acceptable limits. The probability of these combinations of events is judged to be sufficiently low as to result in no significant increase in risk to the health and safety of the public.

Penetration P-80 (1RC158-4"AA-R and 2RC158-4"AA-R):

For a release of radioactive containment atmosphere to occur through the untested P-80 pathway, the following combination of events must occur:

- 1) LOCA; AND
- 2) Rupture of piping inside containment connected to P-80

-OR-

Rupture of a PRT rupture disc; AND

- 3) Leakage through 1/2RC8079; AND
- 4) Leakage out of ECCS relief line piping to the auxiliary building atmosphere.

Only the line associated with the valve packing leakoffs inside containment is not fully missile protected. Although leakage has not been measured individually for 1/2RC8079 and the associated relief line piping outside of containment, the series configuration has not resulted in unacceptable leakage during Type A testing. The probability of occurrence of this combination of events during the limited time period of the waiver and amendment is judged to be sufficiently low as to result in no significant increase in risk to the health and safety of the public.

6. THE BASIS FOR CONCLUDING THAT THE REQUEST DOES NOT INVOLVE A SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards considerations. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- 3) Involve a significant reduction in a margin of safety.

The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated. With respect to an increase in the probability of previously evaluated accidents, leakage through the containment penetrations does not alter or change initiating aspects of the events since containment leakage paths are not initiators or precursors to previously evaluated accidents. With regards to the consequences of accidents previously evaluated, the compensatory actions proposed provide the assurance necessary to conclude the overall containment leakage rates will remain within the limits assumed in the accident analysis. As such, the consequences of previously evaluated accidents, with respect to offsite dose considerations, would not be significantly impacted.

The proposed changes do not create the possibility of a new or different kind of accident from any previously analyzed. The proposed waiver does not result in plant operations or configurations that could create a new or different type of accident. Additional Barriers will be provided for the purpose of providing assurance of containment integrity. These barriers do not result in any component or system being placed into an unanalyzed configuration. In addition, these barriers will not present the possibility of a different failure mechanism. As such, it can be concluded that the possibility for a new or different type of accident has not been introduced.

The proposed changes do not represent a significant reduction in a margin of safety. As described in the Technical Specification Bases, dose calculations suggest that the public exposure would be well below the 10CFR 100 values in the event of a design basis accident.

6. THE BASIS FOR CONCLUDING THAT THE REQUEST DOES NOT INVOLVE A SIGNIFICANT HAZARDS CONSIDERATION (continued)

Calculations indicate that the accident leak rate could be allowed to increase to approximately 0.148%/day before the guideline thyroid dose value given in 10CFR 100 would be exceeded. However, the 0.1%/day pre-operational test acceptance criteria provides an adequate margin of safety to assure the health and safety of the general public. Additional margin is achieved by establishing the allowable operational leakage rate at 0.075%/day. The as measured containment integrated leakage for Unit 1 during the March, 1988 Type A test was 0.0266%/day, and the as measured containment integrated leakage for Unit 2 during the October, 1988 Type A test was 0.0197%/day. Despite the lack of Type C leak testing, substantial barriers to fission product release are provided by the intact system piping and associated valves. These barriers provide mitigating capabilities such that the potential impact on the margin of safety is insignificant.

7. THE BASIS FOR CONCLUDING THAT THE REQUEST DOES NOT INVOLVE IRREVERSIBLE ENVIRONMENTAL CONSEQUENCES

The request does not involve a change in the installation or use of the facilities or components located within the restricted areas as defined in 10CFR20. Commonwealth Edison has determined that this Temporary Waiver of Compliance and Proposed Technical Specification Amendment does not involve a significant increase in the amount, or a significant change in the types, of any effluent that may be released off-site and that there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, this Temporary Waiver of Compliance and proposed Technical Specification amendment meets the eligibility criteria for categorical exclusion set forth in 10CFR Section 51.22(c)(9). Pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with granting of the Temporary Waiver of Compliance.

ATTACHMENT B
ZION NUCLEAR POWER STATION
PROPOSED CHANGES TO
TECHNICAL SPECIFICATIONS CHANGE 91-01

PAGE(s) MODIFIED

212
213
214
214a

PAGE(s) ADDED
NONE

PAGE(s) DELETED
NONE

Current Requirement

The current Technical Specifications require Type C leak testing to be performed at Pa or above in accordance with the provisions of the appropriate section of 10CFR 50 Appendix J. Appendix J establishes the criteria for determining which valves must be tested. As stated in the previous section, it has been determined that the two subject penetrations addressed within this request do require Type C leak rate testing.

Requested Revision

The Surveillance Requirement on page 213 has been revised to reflect the proper number for this Specification. The number scheme was not followed through consistently from the previous page. The current number referenced on the page should be 4.10.1.A.1.c. This item and the "(b) Deleted" from page 212 are administrative in nature in that there are no technical changes involved.

An asterisk note has been added to the bottom of page 213 stating that: "For the current operating cycles (Z1C12 and Z2C12) the Type C leak testing requirements specified in 10CFR 50 Appendix J are not applicable to; Unit 1 - penetration P-80 line 1RC158-4" AA-R, and Unit 2 - penetrations P-76 2SI020-3/4" E-R and P-80 line 2RC158-4" AA-R". This statement has been applied to Specifications 3.10.1.A.2, 3.10.2.A.2, 4.10.1.A.2, 4.10.1.A.4, 4.10.1.A.6, and the Action Statement associated with Specification 3.10.1.A through the addition of an asterisk to these items. The purpose of this change is to clearly identify that, for the period of this Technical Specification Amendment, Type C leakage testing will not be required nor will it be added to the total integrated containment leakage rate for these penetrations.