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10 CFR 50.90

October 19, 2018

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

Limerick Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: License Amendment Request - Revise Technical Specifications to Allow Penetration Flow Path Isolation for Inoperable Isolation Actuation Instrumentation

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon) requests an amendment to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively. The proposed changes would modify the TS actions for inoperable Isolation Actuation Instrumentation to allow for isolation of the flow path(s) that penetrate the Primary Containment (PC) boundary instead of requiring closure of a specific isolation valve. Closure of either the inboard or outboard isolation valve provides the same safety function for isolating the penetration. There is a potential that a closed PC isolation valve located inside the PC may not reopen following repairs to the PC Isolation Actuation Instrumentation. This change would avoid the potential for extended closure of the valve and unavailability of the flow path for the associated plant system until the valve is repaired. This change could also avoid a potential plant shutdown necessary to allow troubleshooting and repair of the valve inside the PC. These changes are consistent with existing LGS TS actions for inoperable PC containment isolation valves. The proposed changes also clarify the TS action for inoperable Isolation Actuation Instrumentation for the Reactor Enclosure manual isolation function. Each of these changes are consistent with Improved Standard Technical Specifications actions for inoperable PC and Secondary Containment (SC) Isolation Actuation Instrumentation.

The proposed amendment has been reviewed by the LGS Plant Operations Review Committee in accordance with the requirements of the Exelon Quality Assurance Program.

Exelon has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92, "Issuance of amendment."

This amendment request contains no regulatory commitments.

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 provides the existing TS pages marked up to show the proposed changes. Attachment 3 provides the existing TS Bases pages marked up to show the proposed changes (information only).

Exelon requests approval of the proposed amendment by October 19, 2019. Once approved, the amendments shall be implemented within 90 days.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the Commonwealth of Pennsylvania of this application for license amendment by transmitting a copy of this letter and its attachments to the designated State Official.

If you have any questions or require additional information, please contact David Neff at (267) 533-1132.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th day of October 2018.

Respectfully,

D. P. Helker

David P. Helker
Manager, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments:
1. Evaluation of Proposed Changes
2. Markup of Proposed Technical Specifications Pages
3. Markup of Proposed Technical Specifications Bases Pages (For Information Only)

cc:	USNRC Region I, Regional Administrator	w/ attachments
	USNRC Senior Resident Inspector, LGS	"
	USNRC Project Manager, LGS	"
	R. R. Janati, Pennsylvania Bureau of Radiation Protection	"

ATTACHMENT 1

License Amendment Request

Limerick Generating Station, Units 1 and 2

Docket Nos. 50-352 and 50-353

EVALUATION OF PROPOSED CHANGES

Subject: **License Amendment Request to Revise Technical Specifications to Allow Penetration Flow Path Isolation for Inoperable Isolation Actuation Instrument**

1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon), proposes changes to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

The proposed changes would modify the TS actions for inoperable Primary Containment (PC) Isolation Actuation Instrumentation to allow for isolation of the PC penetration flow path(s) instead of requiring closure of a specific PC isolation valve (PCIV). Closure of either the inboard or outboard PCIV provides the same safety function for isolating the penetration. There is a potential that a closed PCIV located inside the PC may not reopen following repairs to the PC Isolation Actuation Instrumentation. This change would avoid the potential for extended closure of the valve and unavailability of the PC flow path for the associated plant system until the valve is repaired. This change could also avoid a potential plant shutdown necessary to allow troubleshooting and repair of the valve inside the PC. This change is consistent with existing LGS TS actions for inoperable PCIVs. The proposed changes also clarify the TS action for inoperable Isolation Actuation Instrumentation for the Reactor Enclosure manual isolation function. Each of these changes are consistent with Improved Standard Technical Specifications (ISTS) actions for inoperable PC and Secondary Containment (SC) Isolation Actuation Instrumentation (Reference 1). The proposed changes affect Isolation Actuation Instrumentation Action Statements, TS Table 3.3.2-1, Actions 21, 23, 24 and 26, Table Notations and creation of a new Action 27 for TS Table 3.3.2-1.

2.0 DETAILED DESCRIPTION

To provide an increase in operational flexibility and avoid the potential for an extended isolation of a PC penetration, changes to the TS requirements for required actions for inoperable Isolation Actuation Instrumentation are proposed in this License Amendment Request (LAR). The current TS Actions 21, 23, 24 and 26 in TS Table 3.3.2-1 require closure of the PCIV or SCIV associated with the inoperable Isolation Actuation Instrumentation. The proposed changes would modify the TS actions for inoperable PC Isolation Actuation Instrumentation to allow for isolation of the penetration flow path(s) instead of requiring closure of a specific PCIV. Closure of either the inboard or outboard PCIV provides the same safety function for isolating the PC penetration.

The Isolation Actuation Instrumentation system for the PC has two trip systems: one for the PCIVs located outside the PC (outboard isolation trip system) and the other for the PCIVs located inside the PC (inboard isolation trip system). Closure of either the inboard or outboard PCIV is sufficient to isolate the PC penetration and perform the safety function. Allowing closure of either the inboard or outboard PCIV provides for increased operational flexibility and can reduce extended system unavailability if a closed inboard PCIV does not reopen.

If the inoperable Isolation Actuation Instrumentation is part of the inboard isolation trip system, the current TS 3.3.2 Actions 21, 23, 24 and 26 would require closure of the inboard PCIV. There is a potential that the closed inboard PCIV may not reopen after the PC Isolation Actuation Instrumentation is restored to operable status, thereby requiring an extended closure of the valve and unavailability of the flow path for the associated plant system until troubleshooting or repairs to the valve can be completed. With the PC inerted during normal plant operations, access to these inboard isolation valves requires de-inerting of the PC atmosphere and either a plant shutdown or a significant power reduction to below 15% Rated Thermal Power (RTP). Existing TS actions for inoperable PCIV (TS 3.6.3 Action a) currently allows for isolation of the affected

penetration and does not require closure of an inoperable inboard PCIV. Improved Standard Technical Specifications (ISTS) also includes actions to isolate the affected penetration for inoperable PCIVs and Isolation Actuation Instrumentation (Reference 1). Refer to ISTS Section 3.3.6.1. This LAR proposes to adopt the TS action language that is consistent with language in other existing LGS TS actions and ISTS actions.

To provide clarity on operational actions to be taken for inoperable SC Isolation Actuation Instrumentation for the Reactor Enclosure manual isolation function, a new TS Action 27 in TS Table 3.3.2-1 is proposed. The current TS action applicable to this manual function is Action 24 and requires closing the affected SC isolation valve (SCIV) and declaring the associated system inoperable. The proposed changes would modify the TS action to establish SC integrity for the Unit's Reactor Enclosure zone with the Standby Gas Treatment System (SGTS) operating. These actions result in closure of the SCIVs (inboard or outboard or both) and initiating the SGTS and the Unit's Reactor Enclosure Recirculation System (RERS) thus completing the safety function provided by the manual isolation function instruments. Existing LGS TS actions for inoperable SCIV (TS 3.6.5.2.1) currently allows for isolation of the affected penetration and does not require closure of a specific inboard or outboard SCIV. The ISTS Section 3.3.6.2 for SC Isolation Instrumentation includes actions to isolate the associated SC ventilation zone and placing the associated SGTS in operation (Reference 1). This action establishes SC integrity with the SGTS in operation. Specific inboard or outboard SCIV closure is not required for inoperable SC Isolation Actuation Instrumentation. This LAR proposes to adopt the TS action language that is consistent with language in other existing LGS TS actions and ISTS actions.

The specific changes requested by this LAR are described below.

TS Section 3.3.2 Isolation Actuation Instrumentation, Table 3.3.2-1 Actions 21, 23, 24 and 26 will be revised to replace the current TS Action phrase with the Proposed TS Action Phrase listed in the following tables. A new Action 27 is added to replace Action 24 for Isolation Actuation Instrument Function 7.g (Reactor Enclosure Manual Initiation). The associated Isolation Actuation Instrument Functions listed in Table 3.3.2-1 are also listed in the following tables for information.

Action 21	
Current TS Action phrase	Proposed Revised TS Action Phase
isolation valves closed	penetration flow path(s) isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***
System	Trip Functions
Main Steam Line Isolation	1.a, 1.e, 1.f and 1.g

Action 23	
Current TS Action phrase	Proposed Revised TS Action Phase
system isolation valves are closed	penetration flow path(s) are isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***
System	Trip Functions
Residual Heat Removal (RHR)	2.a and 2.b
Reactor Water Cleanup (RWCU)	3.a, 3.b, 3.c, 3.d and 3.e
High Pressure Coolant Injection (HPCI)	4.a, 4.b, 4.c, 4.d, 4.e, 4.f and 4.h
Reactor Core Isolation Cooling (RCIC)	5.a, 5.b, 5.c, 5.d, 5.e, 5.f and 5.h
Primary Containment	6.c and 6.e

Action 24	
Current TS Action phrase	Proposed Revised TS Action Phase
close the affected system isolation valves	isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***
System	Trip Functions
Main Steam Line	1.h
RHR	2.c
RWCU	3.f
HPCI	4.g
RCIC	5.g
Primary Containment	6.j
Secondary Containment	7.g (moved from Action 24 to new Action 27)

Action 26	
Current TS Action phrase	Proposed Revised TS Action Phase
close the affected system isolation valves	isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***
System	Trip Functions
Primary Containment	6.h and 6.i

Action 27 (New action)	
Current TS Action phrase	Proposed Revised TS Action Phase
(Action 24) Restore the manual initiation function to OPERABLE status within 8 hours or close the affected system isolation valves within the next hour and declare the affected system inoperable or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the next 24 hours.	Restore the manual initiation function to OPERABLE status within 8 hours or establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
System	Trip Function
Secondary Containment	7.g

A new TS Table 3.3.2-1 Notation *** is being added to proposed Revised TS Actions 21, 23, 24 and 26 phrases using the following wording, which currently exists in LGS TS Section 3.6.3 Action a. This Note is not applied to Isolation Actuation Instrument Function 7.g for the Secondary Containment Isolation Instrumentation, which is consistent with the existing LGS TS Section 3.3.2 and ISTS Section 3.3.6.2.

*** Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under administrative control.

The marked-up pages that reflect the proposed changes are provided in Attachment 2 (Markup of Proposed Technical Specifications Pages) and Attachment 3 (Markup of Proposed Technical Specifications Bases Pages – For Information Only).

3.0 TECHNICAL EVALUATION

The proposed changes would modify the TS actions for inoperable PC Isolation Actuation Instrumentation to allow for isolation of the flow path(s) that penetrate the PC boundary instead of requiring closure of a specific PCIV. Allowing closure of either the inboard or outboard PCIV provides the same safety function for isolating the penetration, allows for an increase in operational flexibility, and can reduce extended system unavailability if a closed inboard PCIV does not reopen. There is a potential that a closed PCIV located inside the PC may not reopen following repairs to the PC Isolation Actuation Instrumentation. This change would provide an increase in operational flexibility and avoid potential for extended closure of the PCIV, unavailability of the flow path for the associated plant system and could avoid a potential plant shutdown until the PCIV is repaired and reopened. This change is consistent with existing ISTS actions for inoperable PC Isolation Actuation Instrumentation and the LGS TS and ISTS actions for inoperable PCIVs.

The proposed changes also clarify the TS action for inoperable Isolation Actuation Instrumentation for the Reactor Enclosure manual isolation function to establish SC integrity with SGTS in operation instead of isolating an affected SCIV and declaring the associated system inoperable. These actions result in closure of the SCIVs (inboard and outboard trip

systems) and initiating the SGTS and the Unit's Reactor Enclosure Recirculation System (RERS) thus completing the safety function provided by the manual isolation function instruments. The existing TS action requires closure of the SCIVs associated with the inoperable SC Isolation Actuation Instrumentation trip system (inboard or outboard) and declaring the affected system inoperable (i.e., Reactor Enclosure normal ventilation). Closure of the SCIVs associated with the inoperable instrumentation will cause an automatic shutdown of the Reactor Enclosure normal ventilation system and automatic initiation of the SC isolation for both trip systems and the start of the SGTS and RERS. The proposed changes to create a new Action 27 simplifies the description of the operator actions required to be taken and is based on the end result of performing the safety function for ensuring SC integrity is maintained. This change is also consistent with ISTS Section 3.3.6.2 actions for inoperable SC Isolation Actuation Instrumentation.

The PC Isolation Actuation Instrumentation automatically initiates closure of appropriate PCIVs. The purpose of the PC Isolation Actuation Instrumentation system is to prevent the gross release of radioactive materials to the environment from the fuel or a break in the Reactor Coolant Pressure Boundary (RCPB). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs). PC isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA.

The PC Isolation Actuation Instrumentation includes the sensors, relays, and switches that are necessary to cause initiation of PC and reactor coolant pressure boundary (RCPB) isolation. Most channels include electronic equipment (e.g., trip units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a primary containment isolation signal to the isolation logic. Functional diversity is provided by monitoring a wide range of independent parameters. The input parameters to the isolation logics are listed in TS Table 3.3.2-1 under Functions 1 through 6. Redundant sensor input signals from each parameter are provided for initiation of isolation. The isolation signals generated by the PC Isolation Actuation Instrumentation are implicitly assumed in the safety analyses of UFSAR Chapters 7.3 and 15 to initiate closure of valves to limit offsite radiation doses.

The SC Isolation Actuation Instrumentation automatically initiates closure of appropriate SCIVs and starts the SGTS. The SC is comprised of the SCIVs, SGTS and Reactor Enclosure (RE) Heating, Ventilation and Cooling (HVAC) system and the RERS. The function of these systems, in combination with other accident mitigation systems, is to limit fission product release during and following postulated DBAs. SC isolation, establishment of vacuum with the SGTS within the required time limits and start of the RERS ensure that fission products that leak from PC following a DBA, or are released outside PC, or are released during certain operations when the PC is not required to be operable are maintained within applicable limits.

The SC Isolation Actuation Instrumentation includes the sensors, relays, and switches that are necessary to cause initiation of SC isolation. Most channels include electronic equipment (e.g., trip units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a SC isolation signal to the isolation logic. Functional diversity is provided by monitoring a wide range of independent

parameters. The input parameters to the isolation logics are listed in TS Table 3.3.2-1 under Function 7. Redundant sensor input signals from each parameter are provided for initiation of isolation.

The isolation signals generated by the SC Isolation Actuation Instrumentation are implicitly assumed in the safety analyses of UFSAR Chapter 15 to initiate closure of valves and start the SGTS and RERS to limit offsite radiation doses.

TS Section 3.3.2 Action b states in part, that with the number of operable Isolation Actuation Instrumentation channels less than required by the minimum operable channels per trip system requirements for one trip system, the inoperable channel must be placed in the trip condition within 6 hours or the TS Action required by Table 3.3.2-1 for the affected trip function shall be taken. Additionally, TS Section 3.3.2 Action c states in part, that with the number of operable Isolation Actuation Instrumentation channels less than required by the minimum operable channels per trip system requirements for both trip systems, at least one trip system must be placed in the trip condition within 1 hour and the TS Action required by Table 3.3.2-1 for the affected trip function shall be taken.

If the PC Isolation Actuation Instrumentation logic channel is not restored to operable status or placed in the trip condition within the allowed completion time, plant operations may continue if the affected PC penetration flow path(s) is isolated. Isolating the affected PC penetration flow path(s) accomplishes the safety function of the PC Isolation Actuation Instrumentation channels. Isolating the PC penetration provides the same safety function as closing the inboard or outboard PCIV.

If the SC Isolation Actuation Instrumentation logic for the Reactor Enclosure manual isolation logic channel is not restored to operable status or placed in the trip condition within the allowed completion time, plant operations may continue if the Secondary Containment integrity is established with SGTS in operation. Establishing SC integrity with SGTS in operation accomplishes the safety function of the SCIVs associated with the manual isolation logic channel. Establishing SC integrity with SGTS in operation provides the same safety function as closing the inboard or outboard SCIV.

The allowance provided in Note *** for unisolating the PC penetration, intermittently, under administrative controls, while in the TS Action that isolated the penetration, is provided to support troubleshooting or maintenance of the Isolation Actuation Instrumentation. This Note is consistent with the existing LGS TS Section 3.6.3 and ISTS Sections 3.3.6.1A, 3.3.6.1B and 3.6.1.3. This Note is not applied to the SC penetrations.

These proposed changes are based on previous and current NRC approved standard TS language and remain in compliance with 10 CFR 50.36, Technical Specifications, subsection (c)(2)(i), regarding action to be taken if a limiting condition for operation is not met. The allowance to isolate the PC or SC penetration for an inoperable PCIV or SCIV has been contained in the LGS TS Sections 3.6.3 and 3.6.5.2.1 since original issuance (References 2 and 3). The original LGS TS were created based on NUREG-0123, "Standard Technical Specifications," Revision 3 (Reference 4), which also has the same allowance is Sections 3.6.3 and 3.6.5.2. The allowance to isolate the PC penetration for an inoperable Isolation Actuation Instrumentation is contained in the ISTS in Section 3.3.6.1. The allowance to reopen PCIVs closed to satisfy the LGS TS 3.6.3 requirements on an intermittent basis under administrative control (refer to new

Note ***) has also been included in the original LGS TS in Section 3.6.3 and is included in the ISTS in Sections 3.3.6.1 and 3.6.1.3. This flexibility remains not applicable to SCIVs and is not provided in the new Action 27.

The proposed changes do not alter the physical design of any plant structure, system, or component; therefore, the proposed changes have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents does not change. The proposed changes do not require any new or unusual operator actions. The proposed changes do not introduce any new failure modes that could result in a new accident. There is no change being made to safety analysis assumptions, safety limits or limiting safety system settings that would adversely affect plant safety as a result of the proposed changes.

The proposed changes will maintain plant operation within the bounds of the current analysis for the Loss of Coolant Accident (LOCA) analysis, are consistent with previous and current NRC approved standard TS language and remain in compliance with 10 CFR 50.36. Closure of either the inboard or outboard isolation valve is functionally equivalent to isolating the inboard isolation valve if required for an inoperable Isolation Actuation Instrument under TS 3.3.2. The allowance provided in Note *** for unisolating the PC penetration, intermittently, under administrative controls, is provided to support troubleshooting or maintenance of the Isolation Actuation instrumentation and is consistent with existing LGS and ISTS allowances.

TS Bases Section B3/4.3.2

The TS Bases for the Isolation Actuation Instrumentation (TS Section 3/4.3.2) will be revised to reflect changes to the Note *** that allows unisolating the PC penetration, intermittently, under administrative controls. This revision will incorporate similar language currently contained in TS Bases 3/4.6.3 that describes the administrative controls to be used when unisolating the PC penetration. The marked-up TS Bases pages that reflect the proposed changes are provided in Attachment 3 for information purposes only.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

The NRC regulatory requirements related to the content of the TS are set forth in 10 CFR 50.36. This regulation requires that the TS include items in five categories, including: (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. Section (c)(2) states in part, (c) Technical specifications will include items in the following categories: (2) Limiting conditions for operation. (i) Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

LGS Updated Final Safety Analysis Report (UFSAR) cites the specific regulatory requirements for the PC and SC Isolation Actuation Instrumentation System in UFSAR Sections 7.1.2.1.2, 6.2.1, 6.2.3, 9.4.2 and Table 7.1-3. The Code of Federal Regulations

10 CFR 50, Appendix A, General Design Criteria for Nuclear Power Plants applicable to the PC and SC Isolation Actuation Instrumentation System and a description of applicability at LGS that are germane to the LAR are described below.

GDC 13 Instrumentation and Control

"Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the RCPB, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges."

The LGS PCIS is designed to provide automatic and manual control logic instrumentation for the initiation of signals to close isolation valves during abnormal conditions or normal plant operation to comply with GDC 13.

The instrumentation is located in the Control Room and in the Auxiliary Equipment Room for accessibility to the operator and technical staff for easy availability for maintenance to comply with GDC 13. Access to the equipment shall be under administrative control.

The LGS RE HVAC System instrumentation and controls is designed to monitor system parameters and to provide controls to maintain these parameters within prescribed operating ranges to comply with GDC 13.

The LGS SGTS/RERS instrumentation and controls is designed to monitor system parameters and to provide controls to maintain these parameters within prescribed operating ranges to comply with GDC 13.

GDC 16 Containment Design

"Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require."

The LGS PCIS is designed to automatically initiate the closure of valves in piping that penetrates the Primary Containment whenever the values of the monitored variables exceed preselected operational limits. The valve closures will isolate the lines to provide protection against the consequences of accidents by limiting the release of radioactive materials to the environment to comply with GDC 16.

GDC 54 - Piping Systems Penetrating Containment

"Piping Systems penetrating the primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits."

The LGS PCIS is designed to provide the necessary automatic closure signals to redundant valves in piping that penetrates the Primary Containment to isolate the lines when critical parameters exceed acceptable limits to comply with GDC 54.

GDC 55 - Reactor Coolant Pressure Boundary Penetrating Containment

"Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

a. One locked closed isolation valve inside and one locked closed isolation valve outside containment, or

b. One automatic isolation valve inside and one locked closed isolation valve outside containment, or

c. One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

d. One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to the containment as practical and upon loss of actuating power automatic isolation valves shall be designed to take the position that provides greater safety."

The LGS PCIS is designed to provide the necessary signals for the automatic closure of redundant isolation valves in piping that connects to the reactor vessel and penetrates the Containment to achieve reliable Primary Containment isolation to protect the health and safety of the public in case of a break in the piping to comply with GDC 55.

GDC 56 - Primary Containment Isolation

"Each line that connects directly to the containment atmosphere and penetrates the primary reactor containment shall be provided with containment isolation valves, as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

a. One locked closed isolation valve inside and one locked closed isolation valve outside containment, or

b. One automatic isolation valve inside and one locked closed isolation valve outside containment, or

c. One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

d. One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to the containment as practical, and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements (such as higher quality in design, fabrication, and testing, additional provisions for in-service inspection, protection against more severe natural phenomena, and additional isolation valves and containment) shall include consideration of the population density, use characteristics, and physical characteristics of the site environs."

The LGS PCIS is designed to provide the necessary automatic closure signals to redundant isolation valves, in piping that penetrates the PC and is not part of the Reactor Coolant Pressure Boundary, to achieve reliable PC isolation to protect the health and safety of the public in case of a break in the piping to comply with GDC 56.

GDC 60 - Control of Releases of Radioactive Material to the Environment

"The nuclear power unit design shall include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences. Sufficient holdup capacity shall be provided for retention of gaseous and liquid effluents containing radioactive materials, particularly where unfavorable site environmental conditions can be expected to impose unusual operational limitations upon the release of such effluents to the environment."

The LGS PCIS and SC Isolation System are designed to provide automatic closure signals to isolation valves in piping that penetrates the PC and SC to assure reliable containment isolation to minimize the release of radioactive materials to the environment to protect the health and safety of plant personnel and the public in case of a break in the piping to comply with GDC 60.

The LGS SGTS/RERS is designed to control the release of radioactive gases and particulates to the environment to comply with GDC 60.

Code of Federal Regulations 10 CFR 100, Reactor Site Criteria

"Factors considered in the evaluation of sites include those relating both to the proposed reactor design and the characteristics peculiar to the site. It is expected that reactors will reflect through their design construction and operation an extremely low probability for accidents that could result in release of significant quantities of radioactive fission products. In addition, the site location and the engineered features included as safeguards against the hazards consequences of an accident, should one occur, should insure a low risk of public exposure."

The LGS PCIS is designed to provide automatic closure signals for isolation valves located in lines that penetrate the PC to minimize offsite radioactive release to comply with the limits imposed by 10 CFR 100.

The LGS SGTS/RERS is designed to limit the radiation dose from a fission product release to comply with 10 CFR 50.67.

Code of Federal Regulations 10 CFR 50.67, Accident Source Term

Dose limits for the control room, exclusion boundary and low population zone are specified in 10 CFR 50.67 for plants that have approval to use Alternative Source Terms for accident analyses. The limits in 10 CFR 50.67 supersede the applicable dose limits in 10 CFR 50 GDC 19 and 10 CFR 100 and are supplemented by the guidelines of Regulatory Guide 1.183.

The LGS PCIS is designed to provide automatic closure signals for isolation valves located in lines that penetrate the PC to minimize radioactive releases to comply with the limits imposed by 10 CFR 50.67.

The NRC regulatory requirement constitutes generic design input to the LGS RE HVAC System.

4.2 Precedence

The proposed changes are consistent with the NRC approved ISTS, specifically in Sections 3.3.6.1 and 3.3.6.2 (Reference 1). Other nuclear power plant licensees have NRC approved TS that are based on the ISTS. In one example, Peach Bottom Atomic Power Station, Units 2 and 3, converted the TS to the ISTS in NRC approved amendments 210 and 214 (Reference 5), respectively, and included language from the ISTS Sections 3.3.6.1 and 3.3.6.2.

4.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon), proposes changes to the Technical Specifications (TS), Appendix A of the Renewed Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively.

The proposed changes would modify specific TS Actions for inoperable Primary Containment (PC) Isolation Actuation Instrumentation to allow for isolation of the PC penetration flow path(s) instead of requiring closure of a specific PC isolation valve (PCIV). Closure of either the inboard or outboard PCIV provides the same safety function for isolating the penetration. There is a potential that a closed PC isolation valve located inside the PC may not reopen following repairs to the PC Isolation Actuation Instrumentation. This change would avoid potential for extended closure of the valve and unavailability of the PC flow path for the associated plant system until the valve is repaired. This change could also avoid a potential plant shutdown necessary to allow troubleshooting and repair of the valve inside the PC. This change is consistent with existing LGS TS actions for inoperable PCIV.

The proposed changes also clarify the TS action for inoperable Isolation Actuation Instrumentation for the Reactor Enclosure manual isolation function. The proposed changes would modify the TS action to establish Secondary Containment (SC) integrity for the Unit's Reactor Enclosure zone with the Standby Gas Treatment System (SGTS) operating. These actions result in closure of the Secondary Containment Isolation Valves (SCIVs) (inboard or outboard) and initiating the SGTS and the Unit's Reactor Enclosure Recirculation System (RERS) thus completing the safety function provided by the manual isolation function instruments. Each of these changes are consistent with Improved Standard Technical Specifications (ISTS, NUREG 1433, Standard Technical Specifications, Revision 4) actions for inoperable Isolation Actuation Instrumentation. Exelon has evaluated the proposed changes, using the criteria in 10 CFR 50.92, "Issuance of amendment," and has determined that the proposed changes do not involve a significant hazards consideration. The following information is provided to support a finding of no significant hazards consideration.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed changes would modify specific TS Actions for inoperable PC Isolation Actuation Instrumentation to allow for isolation of the PC penetration flow path(s) instead of requiring closure of a specific PCIV. Closure of either the inboard or outboard PCIV provides the same safety function for isolating the PC penetration. The proposed changes provide for an increase in operational flexibility and avoid the potential for an extended isolation of a PC penetration. The proposed changes also modify the TS action for inoperable Isolation Actuation Instrumentation to include a clarification for the Reactor Enclosure manual isolation function. The change simplifies the description of the operator actions required to be taken and is based on the end result of performing the safety function for ensuring SC integrity is maintained. These changes are consistent with existing LGS TS actions for inoperable PCIVs. These changes are also consistent with Improved Standard Technical Specifications (ISTS) actions for inoperable Isolation Actuation Instrumentation.

   The proposed changes do not alter the physical design of any plant structure, system, or component; therefore, the proposed changes have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents does not change. The proposed changes will maintain plant operation within the bounds of the current analysis for the accident source term dose limits in the Loss of Coolant Accident (LOCA) analysis, and therefore, the changes do not adversely affect the consequences of any accident previously evaluated.

   Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The proposed changes would modify specific TS Actions for inoperable PC Isolation Actuation Instrumentation to allow for isolation of the PC penetration flow path(s) instead of requiring closure of a specific PCIV. Closure of either the inboard or outboard PCIV provides the same safety function for isolating the penetration. The proposed changes provide for an increase in operational flexibility and avoid the potential for an extended isolation of a PC penetration. The proposed changes also modify the TS action for inoperable Isolation Actuation Instrumentation to include a clarification for the Reactor Enclosure manual isolation function. The change simplifies the description of the operator actions required to be taken and is based on the end result of performing the safety function for ensuring SC integrity is maintained. The proposed changes will maintain plant operation within the bounds of the current analysis and assumptions for the accident and special event analysis.

   The proposed changes do not alter the plant configuration (no new or different type of equipment is being installed) or require any new or unusual operator actions. The proposed changes do not alter the safety limits or safety analysis assumptions associated with the operation of the plant. The proposed changes do not introduce any new failure modes that could result in a new accident. The proposed changes do not reduce or adversely affect the capabilities of any plant structure, system, or component in the performance of their safety function. Also, the response of the plant and the operators following the design basis accidents is unaffected by the proposed changes.

   Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No

   The proposed changes would modify specific TS Actions for inoperable PC Isolation Actuation Instrumentation to allow for isolation of the PC penetration flow path(s) instead of requiring closure of a specific PCIV. Closure of either the inboard or outboard PCIV provides the same safety function for isolating the PC penetration. The proposed changes provide for an increase in operational flexibility and avoid the potential for an extended isolation of a PC penetration. The proposed changes also modify the TS action for inoperable Isolation Actuation Instrumentation to include a clarification for the Reactor Enclosure manual isolation function. The change simplifies the description of the operator actions required to be taken and is based on the end result of performing the safety function for ensuring SC integrity is maintained. The proposed changes will maintain plant operation within the bounds of the current analysis and assumptions for the accident and special event analysis.

The proposed changes have no adverse effect on plant operation, or the availability or operation of any accident mitigation equipment. The plant response to the design basis accidents does not change. The proposed changes do not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analyses. There is no change being made to safety analysis assumptions, safety limits or limiting safety system settings that would adversely affect plant safety as a result of the proposed changes.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation, Exelon concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, paragraph (c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

Exelon has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation." However, the proposed amendment does not involve: (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," paragraph (c)(9). Therefore, pursuant to 10 CFR 51.22, paragraph (b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. NUREG 1433, "Standard Technical Specifications," Revision 4, April 2012 (ADAMS Accession No. ML12104A19)
2. NRC letter to Philadelphia Electric Company, "Issuance of Facility Operating License NPF-39 for the Limerick Generating Station, Unit 1," dated August 8, 1985 (ADAMS Accession No. ML011520196)
3. NRC letter to Philadelphia Electric Company, "Issuance of Facility Operating License NPF-85 for the Limerick Generating Station, Unit 2," dated August 25, 1989
4. NUREG 0123, "Standard Technical Specifications," Revision 3, dated Fall 1980
5. NRC letter to Exelon, "Issuance of Improved Technical Specifications, Peach Bottom Atomic Power Station, Unit Nos. 2 and 3, (TAC Nos. M90746 and M90746)," Amendment Nos. 210 and 214, dated August 30, 1995 (ADAMS Accession No. ML011510084)

ATTACHMENT 2

Limerick Generating Station Units 1 and 2
Docket Nos. 50-352 and 50-353

License Amendment Request to Revise Technical Specifications to Allow Penetration Flow Path Isolation for Inoperable Isolation Actuation Instrument

Markup of Proposed Technical Specifications Pages

Unit 1 TS Pages

3/4 3-15
3/4 3-16

Unit 2 TS Pages

3/4 3-15
3/4 3-16

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL [a],[c]	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM [b]	APPLICABLE OPERATIONAL CONDITION	ACTION
7. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level Low, Low - Level 2	B	2	1, 2, 3	25
b. Drywell Pressure - High	H	2	1, 2, 3	25
c.1. Refueling Area Unit 1 Ventilation Exhaust Duct Radiation - High	R	2	*#	25
2. Refueling Area Unit 2 Ventilation Exhaust Duct Radiation - High	R	2	*#	25
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	2	1, 2, 3	25
e. Deleted				
f. Deleted				
g. Reactor Enclosure Manual Initiation	NA	1	1, 2, 3	~~24~~ 27
h. Refueling Area Manual Initiation	NA	1	*	25

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION
ACTION STATEMENTS

Insert A

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24-hours.

ACTION 21 - Be in at least STARTUP with the associated ~~isolation valves closed~~ within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 22 - Be in at least STARTUP within 6 hours.

Insert B

ACTION 23 - In OPERATIONAL CONDITION 1 or 2, verify the affected ~~system isolation valves are closed~~ within 1 hour and declare the affected system inoperable. In OPERATIONAL CONDITION 3, be in at least COLD SHUTDOWN within 12 hours.

ACTION 24 - Restore the manual initiation function to OPERABLE status within 8 hours or ~~close the affected system isolation valves~~ within the next hour and declare the affected system inoperable or be in at ~~least~~ HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 ~~hours.~~

Insert C

ACTION 25 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour.

ACTION 26 - ~~Close the affected system isolation valves~~ within 1 hour.

Insert E

Insert D

TABLE NOTATIONS

ACTION 27 -

* Required when (1) handling RECENTLY IRRADIATED FUEL in the secondary containment, or (2) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

** May be bypassed under administrative control, with all turbine stop valves closed.

\# During operation of the associated Unit 1 or Unit 2 ventilation exhaust system.

Insert F

(a) DELETED

(b) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter. Trip functions common to RPS Actuation Instrumentation are shown in Table 4.3.2.1-1. In addition, for the HPCI system and RCIC system isolation, provided that the redundant isolation valve, inboard or outboard, as applicable, in each line is OPERABLE and all required actuation instrumentation for that valve is OPERABLE, one channel may be placed in an inoperable status for up to 8 hours for required surveillance without placing the channel or trip system in the tripped condition.

ACTION 21 Insert A

penetration flow path(s) isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 23 Insert B

penetration flow path(s) are isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 24 Insert C

isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 26 Insert D

Isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 27 Insert E

Restore the manual initiation function to OPERABLE status within 8 hours or establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

TABLE NOTATIONS Insert F

*** Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under administrative control.

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION	ISOLATION SIGNAL[a],[c]	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM [b]	APPLICABLE OPERATIONAL CONDITION	ACTION
7. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level Low, Low - Level 2	B	2	1, 2, 3	25
b. Drywell Pressure - High	H	2	1, 2, 3	25
c.1. Refueling Area Unit 1 Ventilation Exhaust Duct Radiation - High	R	2	*#	25
2. Refueling Area Unit 2 Ventilation Exhaust Duct Radiation - High	R	2	*#	25
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	2	1, 2, 3	25
e. Deleted				
f. Deleted				
g. Reactor Enclosure Manual Initiation	NA	1	1, 2, 3	~~24~~ 27
h. Refueling Area Manual Initiation	NA	1	*	25

TABLE 3.3.2-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION
ACTION STATEMENTS

Insert A

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 21 - Be in at least STARTUP with the associated ~~isolation valves closed~~ within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 22 - Be in at least STARTUP within 6 hours.

Insert B

ACTION 23 - In OPERATIONAL CONDITION 1 or 2, verify the affected ~~system isolation valves~~ are closed within 1 hour and declare the affected system inoperable. In OPERATIONAL CONDITION 3, be in at least COLD SHUTDOWN within 12 hours.

ACTION 24 - Restore the manual initiation function to OPERABLE status within 8 hours or ~~close the affected system isolation valves~~ within the next hour and declare the affected system inoperable or be in at ~~least~~ HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 ~~hours.~~

Insert C

ACTION 25 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour.

ACTION 26 - ~~Close the affected system isolation valves~~ within 1 hour.

Insert E

Insert D

ACTION 27 -

TABLE NOTATIONS

* Required when (1) handling RECENTLY IRRADIATED FUEL in the secondary containment, or (2) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

** May be bypassed under administrative control, with all turbine stop valves closed.

\# During operation of the associated Unit 1 or Unit 2 ventilation exhaust system.

Insert F

(a) DELETED

(b) A channel may be placed in an inoperable status for up to 6 hours for required surveillance without placing the trip system in the tripped condition provided at least one OPERABLE channel in the same trip system is monitoring that parameter. Trip functions common to RPS Actuation Instrumentation are shown in Table 4.3.2.1-1. In addition, for the HPCI system and RCIC system isolation, provided that the redundant isolation valve, inboard or outboard, as applicable, in each line is OPERABLE and all required actuation instrumentation for that valve is OPERABLE, one channel may be placed in an inoperable status for up to 8 hours for required surveillance without placing the channel or trip system in the tripped condition.

ACTION 21 Insert A

penetration flow path(s) isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 23 Insert B

penetration flow path(s) are isolated by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 24 Insert C

isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 26 Insert D

Isolate the affected penetration flow path(s) by use of one deactivated automatic valve secured in the isolated position, or one closed manual valve or blind flange***

ACTION 27 Insert E

Restore the manual initiation function to OPERABLE status within 8 hours or establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within 1 hour or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

TABLE NOTATIONS Insert F

*** Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under administrative control.

ATTACHMENT 3

Limerick Generating Station Units 1 and 2
Docket Nos. 50-352 and 50-353

License Amendment Request to Revise Technical Specifications to Allow Penetration Flow Path Isolation for Inoperable Isolation Actuation Instrument

Markup of Proposed Technical Specifications Bases Pages
(For Information Only)

Unit 1 TS Bases Pages

B 3/4 3-2

Unit 2 TS Bases Pages

B 3/4 3-2

3/4.3.2 ISOLATION ACTUATION INSTRUMENTATION

This specification ensures the effectiveness of the instrumentation used to mitigate the consequences of accidents by prescribing the OPERABILITY trip setpoints and response times for isolation of the reactor systems. When necessary, one channel may be inoperable for brief intervals to conduct required surveillance.

Surveillance intervals are determined in accordance with the Surveillance Frequency Control Program and maintenance outage times have been determined in accordance with NEDC-30851P, Supplement 2, "Technical Specification Improvement Analysis for BWR Instrumentation Common to RPS and ECCS Instrumentation" as approved by the NRC and documented in the NRC Safety Evaluation Report (SER) (letter to D.N. Grace from C.E. Rossi dated January 6, 1989) and NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," as approved by the NRC and documented in the NRC SER (letter to S.D. Floyd from C.E. Rossi dated June 18, 1990).

Automatic closure of the MSIVs upon receipt of a high-high radiation signal from the Main Steam Line Radiation Monitoring System was removed as the result of an analysis performed by General Electric in NEDO-31400A. The NRC approved the results of this analysis as documented in the SER (letter to George J. Beck, BWR Owner's Group from A.C. Thadani, NRC, dated May 15, 1991).

Some of the trip settings may have tolerances explicitly stated where both the high and low values are critical and may have a substantial effect on safety. The setpoints of other instrumentation, where only the high or low end of the setting have a direct bearing on safety, are established at a level away from the normal operating range to prevent inadvertent actuation of the systems involved.

Except for the MSIVs, the safety analysis does not address individual sensor response times or the response times of the logic systems to which the sensors are connected. For D.C. operated valves, a 3 second delay is assumed before the valve starts to move. For A.C. operated valves, it is assumed that the A.C. power supply is lost and is restored by startup of the emergency diesel generators. In this event, a time of 13 seconds is assumed before the valve starts to move. In addition to the pipe break, the failure of the D.C. operated valve is assumed; thus the signal delay (sensor response) is concurrent with the 10-second diesel startup and the 3 second load center loading delay. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13-second delay. It follows that checking the valve speeds and the 13-second time for emergency power establishment will establish the response time for the isolation functions.

Response time testing for sensors are not required based on the analysis in NEDO 32291-A. Response time testing of the remaining channel components is required as noted in Table 3.3.2-3.

Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is an allowance for instrument drift specifically allocated for each trip in the safety analyses. Primary containment isolation valves that are actuated by the isolation signals specified in Technical Specification Table 3.3.2-1 are identified in Technical Requirements Manual Table 3.6.3-1.

Insert new text here

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

The emergency core cooling system actuation instrumentation is provided to initiate actions to mitigate the consequences of accidents that are beyond the ability of the operator to control. This specification provides the OPERABILITY requirements, trip setpoints and response times that will ensure effectiveness of the systems to provide the design protection. Although the instruments are listed by system, in some cases the same instrument may be used to send the actuation signal to more than one system at the same time.

TS Bases Section 3/4.3.2 INSERT

The opening of a containment isolation valve that was locked or sealed closed to satisfy Technical Specification 3.3.2 Action statements, may be reopened on an intermittent basis under administrative controls. These controls consist of stationing a dedicated individual at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

3/4.3.2 ISOLATION ACTUATION INSTRUMENTATION

This specification ensures the effectiveness of the instrumentation used to mitigate the consequences of accidents by prescribing the OPERABILITY trip setpoints and response times for isolation of the reactor systems. When necessary, one channel may be inoperable for brief intervals to conduct required surveillance.

Surveillance intervals are determined in accordance with the Surveillance Frequency Control Progam and maintenance outage times have been determined in accordance with NEDC-30851P, Supplement 2, "Technical Specification Improvement Analysis for BWR Instrumentation Common to RPS and ECCS Instrumentation" as approved by the NRC and documented in the NRC Safety Evaluation Report (SER) (letter to D.N. Grace from C.E. Rossi dated January 6, 1989) and NEDC-31677P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," as approved by the NRC and documented in the NRC SER (letter to S.D. Floyd from C.E. Rossi dated June 18, 1990).

Automatic closure of the MSIVs upon receipt of a high-high radiation signal from the Main Steam Line Radiation Monitoring System was removed as the result of an analysis performed by General Electric in NEDO-31400A. The NRC approved the results of this analysis as documented in the SER (letter to George J. Beck, BWR Owner's Group from A.C. Thadani, NRC, dated May 15, 1991).

Some of the trip settings may have tolerances explicitly stated where both the high and low values are critical and may have a substantial effect on safety. The setpoints of other instrumentation, where only the high or low end of the setting have a direct bearing on safety, are established at a level away from the normal operating range to prevent inadvertent actuation of the systems involved.

Except for the MSIVs, the safety analysis does not address individual sensor response times or the response times of the logic systems to which the sensors are connected. For D.C. operated valves, a 3 second delay is assumed before the valve starts to move. For A.C. operated valves, it is assumed that the A.C. power supply is lost and is restored by startup of the emergency diesel generators. In this event, a time of 13 seconds is assumed before the valve starts to move. In addition to the pipe break, the failure of the D.C. operated valve is assumed; thus the signal delay (sensor response) is concurrent with the 10-second diesel startup and the 3 second load center loading delay. The safety analysis considers an allowable inventory loss in each case which in turn determines the valve speed in conjunction with the 13-second delay. It follows that checking the valve speeds and the 13-second time for emergency power establishment will establish the response time for the isolation functions.

Response time testing for sensors are not required based on the analysis in NEDO-32291-A. Response time testing of the remaining channel components is required as noted in Table 3.3.2-3.

Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that the difference between each Trip Setpoint and the Allowable Value is an allowance for instrument drift specifically allocated for each trip in the safety analyses. Primary containment isolation valves that are actuated by the isolation signals specified in Technical Specification Table 3.3.2-1 are identified in Technical Requirements Manual Table 3.6.3-1.

Insert new text here

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

The emergency core cooling system actuation instrumentation is provided to initiate actions to mitigate the consequences of accidents that are beyond the ability of the operator to control. This specification provides the OPERABILITY requirements, trip setpoints and response times that will ensure effectiveness of the systems to provide the design protection. Although the instruments are listed by system, in some cases the same instrument may be used to send the actuation signal to more than one system at the same time.

TS Bases Section 3/4.3.2 INSERT

The opening of a containment isolation valve that was locked or sealed closed to satisfy Technical Specification 3.3.2 Action statements, may be reopened on an intermittent basis under administrative controls. These controls consist of stationing a dedicated individual at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.