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U.S. Nuclear Regulatory Commission
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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 – Supplement
Proposed Changes to the Technical Specifications to Address Secondary Containment Personnel Access Door Openings

References:

1. Letter from James Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request - Proposed Changes to the Technical Specifications to Address Transient Secondary Containment Conditions," dated February 2, 2015

2. Electronic mail message from Richard Ennis, U.S. Nuclear Regulatory Commission, to Glenn Stewart, Exelon Generation Company, LLC, "Draft RAIs - Limerick Units 1 and 2 - Transient Secondary Containment Conditions (TACs MF5687 & MF5688)," dated May 28, 2015

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon), requested 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 in the Reference 1 letter would revise TS Section 3.6.5 Limiting Conditions for Operation (LCOs) to add a footnote which would allow secondary containment access openings to be opened intermittently under administrative control. The revised surveillance requirements (SRs) would allow transients during which the secondary containment pressure may not meet the SR pressure requirements, and acknowledge that secondary containment access openings may be open for entry and exit. In addition, the definitions for Reactor Enclosure Secondary Containment Integrity and Refueling Floor Secondary Containment Integrity, as specified in LGS TS Definitions, would be revised for consistency to reflect the changes proposed to the TS Section 3.6.5 LCOs and SRs described above, as applicable.

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. The draft request for additional information (RAI) was sent from the NRC to Exelon by electronic mail message on May 28, 2015 (Reference 2). The additional questions were discussed during a conference call with the NRC on June 9, 2015. During the conference call, Exelon

indicated that a reduction in the scope of the original changes requested was being considered in lieu of responding to the RAI. The reduced scope would involve an allowance for brief, inadvertent, simultaneous opening of redundant secondary containment personnel access doors during normal entry and exit conditions.

Subsequently, Exelon decided to reduce the scope of the Reference 1 submittal. As a result, this letter supplements the original license amendment request to reduce the scope of changes requested as discussed above. All other proposed changes in the Reference 1 submittal are hereby withdrawn.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachment 1 of the Reference 1 letter. Exelon has concluded that the information provided in this supplement does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, Exelon has concluded that the information in this supplement does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

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

This supplement contains no regulatory commitments.

Attachment 1 provides the evaluation of the proposed changes. Attachment 2 provides a copy of the marked up TS pages that reflect the proposed changes. Attachment 3 provides a copy of the marked up TS Bases pages that reflect the proposed changes (information only).

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the Commonwealth of Pennsylvania of this supplement 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 Glenn Stewart at 610-765-5529.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 11th day of August 2015.

Respectfully,

D. P. Helker

David P. Helker
Manager, Licensing & 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 (Information Only)

cc:	Regional Administrator - NRC Region I	w/ attachments
	NRC Senior Resident Inspector - Limerick Generating Station	"
	NRC Project Manager, NRR - Limerick Generating Station	"
	Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Protection	"

ATTACHMENT 1

License Amendment Request - Supplement

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

EVALUATION OF PROPOSED CHANGES

SUBJECT: **Proposed Changes to the Technical Specifications to Address Secondary Containment Personnel Access Door Openings**

1.0 SUMMARY DESCRIPTION

In the Reference 1 letter, Exelon Generation Company, LLC (Exelon), requested 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 in the Reference 1 letter would revise TS Section 3.6.5 Limiting Conditions for Operation (LCOs) to add a footnote which allows secondary containment access openings to be opened intermittently under administrative control. The revised surveillance requirements (SRs) would allow transients during which the secondary containment pressure may not meet the SR pressure requirements, and acknowledge that secondary containment access openings may be open for entry and exit. In addition, the definitions for Reactor Enclosure Secondary Containment Integrity and Refueling Floor Secondary Containment Integrity, as specified in LGS TS Definitions, would be revised for consistency to reflect the changes proposed to the TS Section 3.6.5 LCOs and SRs described above, as applicable.

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. The draft request for additional information (RAI) was sent from the NRC to Exelon by electronic mail message on May 28, 2015 (Reference 2). The additional questions were discussed during a conference call with the NRC on June 9, 2015. During the conference call, Exelon indicated that a reduction in the scope of the original changes requested was being considered in lieu of responding to the RAI. Subsequently, Exelon decided to reduce the scope of the Reference 1 submittal. The reduced scope in this supplement only involves an allowance for brief, inadvertent, simultaneous opening of redundant secondary containment personnel access doors during normal entry and exit conditions.

2.0 DETAILED DESCRIPTION

The proposed changes address issues related to the secondary containment personnel access door openings. The secondary containment is a single system that performs a safety function. There is no redundant train or system that can perform the secondary containment function should the secondary containment be inoperable.

NUREG-1022, Revision 3, "Event Report Guidelines 10 CFR 50.72 and 50.73," discusses the reporting criteria contained in the Code of Federal Regulations (CFR), Title 10, Paragraphs 50.72 and 50.73. The discussion of 50.72(b)(3)(v) and 50.73(a)(2)(v), "Any event or condition that … could have prevented the fulfillment of the safety function …," states, "There are a limited number of single-train systems that perform safety functions (e.g., the HPCI system in BWRs). For such systems, inoperability of the single train is reportable even though the plant TS may allow such a condition to exist for a limited time." Under this guidance, failure to meet the reactor enclosure or refueling area secondary containment SRs for any period of time requires declaring the reactor enclosure or refueling area secondary containment inoperable and, therefore, reporting the condition under 10 CFR 50.72 and 10 CFR 50.73, as applicable. This reporting requirement has resulted in Licensee Event Reports (LERs) in the last several years even though the reactor enclosure or refueling area secondary containment was restored to operable status quickly (i.e., typically in a matter of seconds) and the reactor enclosure or refueling area secondary containment continued to be capable of performing its safety function.

These reports are an unwarranted use of licensee and NRC resources. To prevent the need for reporting these issues, the following changes are proposed:

Proposed SRs 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2 Revision: The purpose of the proposed change is to provide an allowance for brief, inadvertent, simultaneous opening of both an inner and outer secondary containment personnel access door during normal entry and exit conditions. While some plants have interlocks to prevent opening both an inner and outer door, LGS does not. Under the LGS TS, opening both an inner and outer door in an access opening at the same time would result in failure to meet SR 4.6.5.1.1.b.2 or 4.6.5.1.2.b.2, as appropriate, which requires one access door in each access opening to be closed. This situation requires declaring the secondary containment inoperable with the attendant reporting requirements, as applicable. NUREG-1434 BWR/6 ISTS SR 3.6.4.1.3 contains an exception that allows both doors in an access opening to be open simultaneously for normal entry and exit, but the LGS SRs do not have such an exception. The proposed change adds the BWR/6 exception to the LGS SRs.

The original licensed design of the LGS secondary containment airlock system consists of inner and outer doors at secondary containment access points. The original approved plant design does not prevent simultaneous inner and outer door opening through mechanical or electrical interlocks; therefore, occasional brief, simultaneous door openings are possible and do not constitute a personnel error or equipment failure. Therefore, declaring secondary containment inoperable for these brief occurrences is not warranted. The change to the SR description would resolve this inconsistency.

Proposed Definition Revisions: The definitions for Reactor Enclosure Secondary Containment Integrity and Refueling Floor Secondary Containment Integrity, as specified in LGS TS Definitions 1.33 and 1.36, respectively, are being revised by adding the changes described above, as applicable, for consistency with the changes proposed to the TS Section 3.6.5 SRs.

Proposed Bases Revision: The LGS TS 3.6.5 Secondary Containment Bases are being revised consistent with the proposed changes to SRs 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2.

3.0 TECHNICAL EVALUATION

The LGS secondary containment consists of three distinct isolable zones. Zones I and II are the Unit 1 and Unit 2 reactor enclosures, respectively, and Zone III is the common refueling area. Each zone has an independent normal ventilation system which is capable of providing secondary containment isolation as required.

Each reactor enclosure zone completely encloses and provides secondary containment for its corresponding primary containment and supporting equipment. The common refueling area zone completely encloses and provides secondary containment for the refueling floor and spent fuel storage facilities for Unit 1 and Unit 2.

The safety function of the secondary containment is to contain, dilute, and hold up fission products that may leak from primary containment following a Design Basis Accident (DBA) to ensure the control room operator and offsite doses are within the regulatory and NRC-approved limits. In conjunction with operation of the Standby Gas Treatment System (SGTS), the Reactor

Enclosure Recirculation System (RERS), and closure of certain valves whose lines penetrate the secondary containment, the secondary containment is designed to reduce the activity level of the fission products that bypass or leak from primary containment, or are released from the reactor coolant pressure boundary components located in secondary containment prior to release to the environment. For the secondary containment to be considered operable, it must have adequate leak tightness to ensure that the required vacuum can be established and maintained by a single SGT subsystem when that subsystem is in operation.

It is possible for the respective secondary containment pressure to rise relative to the environmental pressure. To prevent ground level exfiltration of radioactive material while allowing the secondary containment to be designed as a conventional structure, the secondary containment requires support systems to maintain the enclosure pressure at less than atmospheric pressure. During normal operation, non-safety related systems are used to maintain the secondary containment at a negative pressure. SR 4.6.5.1.1.a [4.6.5.1.2.a] requires the secondary containment to be ≥ 0.25 inch of vacuum water gauge when the secondary containment is required to be operable (for the reactor enclosure secondary containment - Operational Conditions 1, 2, and 3; for refueling floor secondary containment - when recently irradiated fuel is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel, with the vessel head removed and fuel in the vessel). SR 4.6.5.1.1.c.1 requires verification that the reactor enclosure secondary containment can be drawn down to be ≥ 0.25 inch of vacuum water gauge in ≤ 916 seconds using one standby gas treatment (SGT) subsystem. SR 4.6.5.1.1.c.2 [4.6.5.1.2.c] requires verification that the reactor enclosure secondary containment [refueling floor secondary containment] can be maintained ≥ 0.25 inch of vacuum water gauge for one hour using one SGT subsystem at a flow rate ≤ 2500 [764] cfm. Following an accident, the SGTS ensures the secondary containment pressure is less than the external atmospheric pressure.

The secondary containment boundary includes personnel access openings. A secondary containment personnel access opening contains at least one inner and one outer door. All secondary containment personnel access doors are normally kept closed, except when the access opening is being used for entry and exit of personnel. Each secondary containment personnel access door is equipped with a position switch to support a monitoring system which consists of local indicating lights, a local audible alarm, and Main Control Room (MCR) annunciator lights and alarms. The monitoring system operates as follows:

1. When both doors are closed the indicating lights located on both sides above each door are not lit.
2. When one door (either inner or outer) is opened, the indicating light above the door that is still closed is lit to warn against opening. The indicating light above the opened door is not lit.
3. When both doors are opened, the indicating lights above each door are lit, an instantaneous audible alarm is annunciated, and after a preset time delay, a MCR alarm is annunciated to identify that secondary containment has been breached. For LGS, this preset time delay has been established at 10 seconds.

The secondary containment and SGTS together ensure radioactive material is contained. As long as a SGT subsystem can draw down and maintain the required vacuum in the affected

secondary containment when needed (as demonstrated by SR 4.6.5.1.1.c.1 or SR 4.6.5.1.1.c.2 [4.6.5.1.2.c]), the secondary containment can perform its safety functions.

Station personnel passing through a secondary containment personnel access door is considered a normal planned activity. However, the simultaneous opening of both an inner and outer door in an access opening does not satisfy the current TS SR 4.6.5.1.1.b.2 [4.6.5.1.2.b.2]. Once one door is closed, the SR is met. The time that both the inner and outer doors are simultaneously open is typically less than 10 seconds for personnel access. The design basis calculated draw down time for the reactor enclosure secondary containment is 930 seconds. This calculation assumes that the vacuum within the affected secondary containment zone(s) at time equals 0 seconds of a DBA is 0.0 inch of vacuum water gauge and has an allowable in-leakage rate of 2500 cfm. The post-LOCA [Loss of Coolant Accident] dose analysis uses the draw down time and in-leakage rate to compute the on-site and off-site doses. The post-LOCA dose analysis conservatively assumes that for the entire 930 second draw down time, the vacuum within the affected secondary containment zone remains at 0.0 inch vacuum water gauge, and that all the primary containment leakage is released unfiltered to the environment. After the 930 seconds time is reached, a 0.25 inch vacuum water gauge is restored and all primary containment leakage is filtered through the SGTS and RERS prior to release to the environment, and reactor enclosure secondary containment is restored. Based on the current LGS design bases described above, the brief, inadvertent, simultaneous opening of both an inner and outer personnel access door during normal entry and exit conditions, and their prompt closure by normal means, are bounded by the existing draw down calculation and dose, and will not result in a failure of a safety system needed to control the release of radioactive material to the environment. The brief, inadvertent, simultaneous opening of both secondary containment personnel access opening doors does not impact the design bases draw down time, the ability to maintain a 0.25 inch vacuum water gauge, and will not result in an increase in any on-site or off-site dose.

LGS has adopted an alternative source term (AST) in accordance with 10 CFR 50.67, "Accident source term." Using the methodology described in NRC Regulatory Guide 1.183, no activity releases are assumed to occur for the first two minutes following initiation of a LOCA. LGS SR 4.6.5.1.1.c.1 allows a 916-second draw down time to ensure the secondary containment is ≥ 0.25 inches of water vacuum. Because the typical draw down time using one SGT subsystem is well under 60 seconds, substantial margin exists to ensure that the secondary containment can be re-established during brief, simultaneous opening of inner and outer secondary containment personnel access doors. Additionally, during drawdown of secondary containment, no credit is taken for filtering by either the SGTS or RERS.

As discussed in Section 2 above, the reporting requirements in 10 CFR 50.72 and 50.73, as applicable, require prompt notification and submittal of an LER whenever the secondary containment is inoperable, regardless of the length of time of the inoperability or whether secondary containment could still fulfill its safety function. To address this situation, the following changes are proposed which will allow the secondary containment to be operable during brief circumstances which currently would require declaring the secondary containment inoperable.

Proposed SR 4.6.5.1.1.b.2 [4.6.5.1.2.b.2] Revision

SR 4.6.5.1.1.b.2 [4.6.5.1.2.b.2] is proposed to be revised to include the same exception as the NUREG-1434 BWR/6 SR 3.6.4.1.3. The text in italics, below, is proposed to be added.

> Verify in accordance with the Surveillance Frequency Control Program that: … At least one door in each access to the reactor enclosure [refueling area] secondary containment is closed, *except when the access opening is being used for entry and exit.*

NUREG-1434 BWR/6 ISTS SR 3.6.4.1.3 contains an exception that allows both doors in an access opening to be opened simultaneously for normal entry and exit, but the LGS TS SR 4.6.5.1.1.b.2 [4.6.5.1.2.b.2] does not have such an exception. This allowance is reasonable because the doors will be closed following entry or exit, restoring the secondary containment boundary.

LGS TS SR 4.6.5.1.1.b.2 [4.6.5.1.2.b.2] requires verification that at least one door is closed in each secondary containment penetration. The intent of these requirements is to not breach secondary containment at any time when secondary containment is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times. All secondary containment personnel access doors are normally kept closed, except when the access opening is being used for entry and exit. Brief, simultaneous opening of secondary containment personnel access doors is acceptable due to the low probability of an event that requires secondary containment during the short time in which the secondary containment is open.

Personnel are trained in Nuclear General Employee Training (NGET) to not open a secondary containment personnel access door if the indicating light is illuminated. However, as licensed by the NRC, there is no mechanical or electrical interlock associated with these doors. Proceeding through a door requires an individual to look up at the condition of the indicating light, then card in/out (as applicable), re-look at the status of the indicating light and then look down again and proceed to open the door. Occasionally, an individual attempts access through the opposite airlock entry point, and an alarm sounds due to a simultaneous door opening by another individual. Well-intended individuals often end up in this situation, which cannot be prevented under the original licensed design. From a safety perspective, during a design basis accident (LOCA with simultaneous LOOP), Emergency Diesel Generators receive a start signal 3 seconds after the start of the accident, are ready to load at 13 seconds, apply 480v power at 16 seconds with the SGTS at rated flow at 18 seconds. In addition, no credit is taken for any negative pressure in the building at the time of the event. The AST analysis assumptions are such that no credit is taken for secondary containment for the first two minutes following a Design Basis LOCA or fuel handling accident. Based on the original licensed design of the LGS secondary containment and the allowances of AST, it can be concluded that brief, simultaneous opening of inner and outer secondary containment personnel access doors are possible within the LGS secondary containment design, and therefore, a declaration of inoperability is not warranted.

Proposed Bases Revisions

The LGS TS 3.6.5 Secondary Containment Bases are being revised consistent with the proposed changes to SRs 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

The following regulatory requirements have been considered:

- Title 10 of the Code of Federal Regulations (10 CFR), Section 50.36, "Technical specifications," in which the Commission established its regulatory requirements related to the contents of the TS. Specifically, 10 CFR 50.36(c)(2) states, in part, "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." 10 CFR 50.36(c)(3) states, "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

The proposed changes to the secondary containment SRs do not affect compliance with these regulations.

The applicable 10 CFR Part 50, Appendix A, General Design Criteria, was considered as follows:

- Criterion 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 proposed changes do not alter the design of the secondary containment or its ability to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity.

4.2 Precedence

The proposed change to modify LGS SRs 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2 to allow brief, inadvertent, simultaneous opening of redundant secondary containment personnel access doors for entry and exit conditions is consistent with the improved Standard Technical Specifications endorsed by the NRC in NUREG-1434, Standard Technical Specifications - General Electric BWR/6 Plants, Revision 4 (Reference 3)

4.3 No Significant Hazards Consideration

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 revise TS Section 3.6.5 Surveillance Requirements (SRs) to allow for brief, inadvertent, simultaneous opening of redundant secondary containment personnel access doors during normal entry and exit conditions.

Exelon has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No. The proposed changes address temporary conditions during which the secondary containment SRs is not met. The secondary containment is not an initiator of any accident previously evaluated. As a result, the probability of any accident previously evaluated is not increased. The consequences of an accident previously evaluated while utilizing the proposed changes are not impacted and are bounded by the existing design bases calculations and analyses. As a result, the consequences of an accident previously evaluated are not significantly increased.

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

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

Response: No. The proposed changes do not alter the protection system design, create new failure modes, or change any modes of operation. The proposed changes do not involve a physical alteration of the plant, and no new or different kind of equipment will be installed. Consequently, there are no new initiators that could result in a new or different kind of accident.

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

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No. The proposed changes address temporary conditions during which the secondary containment SRs is not met. The allowance for both an inner and outer secondary containment access door to be open simultaneously for entry and exit does not affect the safety function of the reactor enclosure and refueling area secondary containments as the doors are promptly closed after entry or exit, thereby restoring the secondary containment boundary. In addition, brief, inadvertent, simultaneous opening and closing of redundant secondary containment personnel access doors during normal entry and exit conditions does not affect the ability of the Standby Gas Treatment System to establish the

required secondary containment vacuum. Therefore, the safety function of the secondary containment is not affected.

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

Based on the above, Exelon concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(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 to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review 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, or would change an inspection or surveillance requirement. 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(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Letter from James Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request - Proposed Changes to the Technical Specifications to Address Transient Secondary Containment Conditions," dated February 2, 2015.

2. Electronic mail message from Richard Ennis, U.S. Nuclear Regulatory Commission, to Glenn Stewart, Exelon Generation Company, LLC, "Draft RAIs - Limerick Units 1 and 2 - Transient Secondary Containment Conditions (TACs MF5687 & MF5688)," dated May 28, 2015.

3. NUREG-1434, "Standard Technical Specifications, General Electric BWR/6 Plants," Revision 4.0, dated April 2012.

ATTACHMENT 2

License Amendment Request - Supplement

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

Proposed Changes to the Technical Specifications to Address Secondary Containment Personnel Access Door Openings

Markup of Proposed Technical Specifications Pages

Unit 1 TS Pages

1-6
1-7
3/4 6-46
3/4 6-47

Unit 2 TS Pages

1-6
1-7
3/4 6-46
3/4 6-47

PURGE - PURGING

1.31 PURGE or PURGING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

RATED THERMAL POWER

1.32 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3515 MWt.

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

1.33 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall exist when:

a. All reactor enclosure secondary containment penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

2. Closed by at least one manual valve, blind flange, slide gate damper, or deactivated automatic valve secured in its closed position, except as provided by Specification 3.6.5.2.1.

b. All reactor enclosure secondary containment hatches and blowout panels are closed and sealed.

c. The standby gas treatment system is in compliance with the requirements of Specification 3.6.5.3.

d. The reactor enclosure recirculation system is in compliance with the requirements of Specification 3.6.5.4.

e. At least one door in each access to the reactor enclosure secondary containment is closed, **except when the access opening is being used for entry and exit.** Insert

f. The sealing mechanism associated with each reactor enclosure secondary containment penetration, e.g., welds, bellows, or O-rings, is OPERABLE.

g. The pressure within the reactor enclosure secondary containment is less than or equal to the value required by Specification 4.6.5.1.1a.

REACTOR PROTECTION SYSTEM RESPONSE TIME

1.34 REACTOR PROTECTION SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

RECENTLY IRRADIATED FUEL

1.35 RECENTLY IRRADIATED FUEL is fuel that has occupied part of a critical reactor core within the previous 24 hours.

REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY

1.36 REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY shall exist when:

a. All refueling floor secondary containment penetrations required to be closed during accident conditions are either:

REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY (Continued)

1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

2. Closed by at least one manual valve, blind flange, slide gate damper, or deactivated automatic valve secured in its closed position, except as provided by Specification 3.6.5.2.2.

b. All refueling floor secondary containment hatches and blowout panels are closed and sealed.

c. The standby gas treatment system is in compliance with the requirements of specification 3.6.5.3.

d. At least one door in each access to the refueling floor secondary containment is closed, **except when the access opening is being used for entry and exit.** Insert

e. The sealing mechanism associated with each refueling floor secondary containment penetration, e.g., welds, bellows, or O-rings, is OPERABLE.

f. The pressure within the refueling floor secondary containment is less than or equal to the value required by Specification 4.6.5.1.2a.

REPORTABLE EVENT

1.37 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

RESTRICTED AREA

1.37a RESTRICTED AREA means an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. RESTRICTED AREA does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a RESTRICTED AREA.

1.38 (Deleted)

SHUTDOWN MARGIN (SDM)

1.39 SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical throughout the operating cycle assuming that:

a. The reactor is xenon free;

b. The moderator temperature is ≥ 68°F, corresponding to the most reactive state; and

c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.

SITE BOUNDARY

1.40 The SITE BOUNDARY shall be that line as defined in Figure 5.1.3-1a.

SOURCE CHECK

1.41 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

3/4.6.5 SECONDARY CONTAINMENT

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

a. Verifying in accordance with the Surveillance Frequency Control Program that the pressure within the reactor enclosure secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.

b. Verifying in accordance with the Surveillance Frequency Control Program that:

1. All reactor enclosure secondary containment equipment hatches and blowout panels are closed and sealed.

2. At least one door in each access to the reactor enclosure secondary containment is closed, **except when the access opening is being used for entry and exit.**

Insert

3. All reactor enclosure secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.

c. In accordance with the Surveillance Frequency Control Program:

1. Verifying that one standby gas treatment subsystem will draw down the reactor enclosure secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 916 seconds with the reactor enclosure recirc system in operation and

2. Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the reactor enclosure secondary containment at a flow rate not exceeding 2500 cfm with wind speeds of ≤ 7.0 mph as measured on the wind instrument on Tower 1, elevation 30' or, if that instrument is unavailable, Tower 2, elevation 159'.

3/4.6.5 SECONDARY CONTAINMENT

REFUELING AREA SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: When RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel, with the vessel head removed and fuel in the vessel.

ACTION:

Without REFUELING AREA SECONDARY CONTAINMENT INTEGRITY, suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

a. Verifying in accordance with the Surveillance Frequency Control Program that the pressure within the refueling area secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.

b. Verifying in accordance with the Surveillance Frequency Control Program that:

1. All refueling area secondary containment equipment hatches and blowout panels are closed and sealed.

2. At least one door in each access to the refueling area secondary containment is closed, **except when the access opening is being used for entry and exit.**

Insert

3. All refueling area secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.

c. In accordance with the Surveillance Frequency Control Program:

Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the refueling area secondary containment at a flow rate not exceeding 764 cfm.

PURGE - PURGING

1.31 PURGE or PURGING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

RATED THERMAL POWER

1.32 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3515 MWt.

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

1.33 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall exist when:

a. All reactor enclosure secondary containment penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

2. Closed by at least one manual valve, blind flange, slide gate damper or deactivated automatic valve secured in its closed position, except as provided by Specification 3.6.5.2.1.

b. All reactor enclosure secondary containment hatches and blowout panels are closed and sealed.

c. The standby gas treatment system is in compliance with the requirements of Specification 3.6.5.3.

d. The reactor enclosure recirculation system is in compliance with the requirements of Specification 3.6.5.4.

e. At least one door in each access to the reactor enclosure secondary containment is closed, **except when the access opening is being used for entry and exit.** Insert

f. The sealing mechanism associated with each reactor enclosure secondary containment penetration, e.g., welds, bellows, or O-rings, is OPERABLE.

g. The pressure within the reactor enclosure secondary containment is less than or equal to the value required by Specification 4.6.5.1.1a.

REACTOR PROTECTION SYSTEM RESPONSE TIME

1.34 REACTOR PROTECTION SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by any series of sequential, overlapping or total steps such that the entire response time is measured.

RECENTLY IRRADIATED FUEL

1.35 RECENTLY IRRADIATED FUEL is fuel that has occupied part of a critical reactor core within the previous 24 hours.

REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY

1.36 REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY shall exist when:

a. All refueling floor secondary containment penetrations required to be closed during accident conditions are either:

REFUELING FLOOR SECONDARY CONTAINMENT INTEGRITY (Continued)

1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

2. Closed by at least one manual valve, blind flange, slide gate damper or deactivated automatic valve secured in its closed position, except as provided by Specification 3.6.5.2.2.

b. All refueling floor secondary containment hatches and blowout panels are closed and sealed.

c. The standby gas treatment system is in compliance with the requirements of Specification 3.6.5.3.

d. At least one door in each access to the refueling floor secondary containment is closed, **except when the access opening is being used for entry and exit.**

Insert

e. The sealing mechanism associated with each refueling floor secondary containment penetration, e.g., welds, bellows, or O-rings, is OPERABLE.

f. The pressure within the refueling floor secondary containment is less than or equal to the value required by Specification 4.6.5.1.2a.

REPORTABLE EVENT

1.37 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

RESTRICTED AREA

1.37a RESTRICTED AREA means an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. RESTRICTED AREA does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a RESTRICTED AREA.

1.38 (Deleted)

SHUTDOWN MARGIN (SDM)

1.39 SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical throughout the operating cycle assuming that:

a. The reactor is xenon free;

b. The moderator temperature is ≥ 68°F, corresponding to the most reactive state; and

c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.

SITE BOUNDARY

1.40 The SITE BOUNDARY shall be that line as defined in Figure 5.1.3-1a.

SOURCE CHECK

1.41 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

3/4.6.5 SECONDARY CONTAINMENT

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

a. Verifying in accordance with the Surveillance Frequency Control Program that the pressure within the reactor enclosure secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.

b. Verifying in accordance with the Surveillance Frequency Control Program that:

1. All reactor enclosure secondary containment equipment hatches and blowout panels are closed and sealed.

Insert

2. At least one door in each access to the reactor enclosure secondary containment is closed, **except when the access opening is being used for entry and exit.**

3. All reactor enclosure secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.

c. In accordance with the Surveillance Frequency Control Program:

1. Verifying that one standby gas treatment subsystem will draw down the reactor enclosure secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 916 seconds with the reactor enclosure recirc system in operation, and

2. Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the reactor enclosure secondary containment at a flow rate not exceeding 2500 cfm with wind speeds of $\leq$ 7.0 mph as measured on the wind instrument on Tower 1, elevation 30' or, if that instrument is unavailable, Tower 2, elevation 159'.

3/4.6.5 SECONDARY CONTAINMENT

REFUELING AREA SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: When RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel, with the vessel head removed and fuel in the vessel.

ACTION:

Without REFUELING AREA SECONDARY CONTAINMENT INTEGRITY, suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment, and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

a. Verifying in accordance with the Surveillance Frequency Control Program that the pressure within the refueling area secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.

b. Verifying in accordance with the Surveillance Frequency Control Program that:

1. All refueling area secondary containment equipment hatches and blowout panels are closed and sealed.

Insert

2. At least one door in each access to the refueling area secondary containment is closed, **except when the access opening is being used for entry and exit.**

3. All refueling area secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.

c. In accordance with the Surveillance Frequency Control Program:

Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the refueling area secondary containment at a flow rate not exceeding 764 cfm.

ATTACHMENT 3

License Amendment Request - Supplement

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

Proposed Changes to the Technical Specifications to Address Secondary Containment Personnel Access Door Openings

Markup of Proposed Technical Specifications Bases Pages (Information Only)

Unit 1 TS Bases Page
B 3/4 6-5

Unit 2 TS Bases Page
B 3/4 6-5

3/4.6.5 SECONDARY CONTAINMENT

Secondary containment is designed to minimize any ground level release of radioactive material which may result from an accident. The Reactor Enclosure and associated structures provide secondary containment during normal operation when the drywell is sealed and in service. At other times the drywell may be open and, when required, secondary containment integrity is specified.

Establishing and maintaining a vacuum in the reactor enclosure secondary containment with the standby gas treatment system in accordance with the Surveillance Frequency Control Program, along with the surveillance of the doors, hatches, dampers and valves, is adequate to ensure that there are no violations of the integrity of the secondary containment.

The OPERABILITY of the reactor enclosure recirculation system and the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA. The reduction in containment iodine inventory reduces the resulting SITE BOUNDARY and Control Room radiation doses associated with containment leakage. The operation of these systems and resultant iodine removal capacity are consistent with the assumptions used in the LOCA analysis. Provisions have been made to continuously purge the filter plenums with instrument air when the filters are not in use to prevent buildup of moisture on the adsorbers and the HEPA filters.

As a result of the Alternative Source Term (AST) project, secondary containment integrity of the refueling area is not required during certain conditions when handling irradiated fuel or during CORE ALTERATIONS and alignment of the Standby Gas Treatment System to the refueling area is not required. The control room dose analysis for the Fuel Handling Accident (FHA) is based on unfiltered releases from the South Stack and therefore, does not require the Standby Gas Treatment System to be aligned to the refueling area.

However, when handling RECENTLY IRRADIATED FUEL or during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel, secondary containment integrity of the refueling area is required and alignment of the Standby Gas Treatment System to the refueling area is required. The AST fuel handling analysis does not include an accident involving RECENTLY IRRADIATED FUEL or an accident involving draining the reactor vessel.

The Standby Gas Treatment System is required to be OPERABLE when handling irradiated fuel, handling RECENTLY IRRADIATED FUEL, during CORE ALTERATIONS and during operations with a potential to drain the vessel with the vessel head removed and fuel in the vessel. Fuel Handling Accident releases from the North Stack must be filtered through the Standby Gas Treatment System to maintain control room doses within regulatory limits. The OPERABILITY of the Standby Gas Treatment System assures that releases, if made through the North Stack, are filtered prior to release.

INSERT

3/4.6.5 SECONDARY CONTAINMENT

Secondary containment is designed to minimize any ground level release of radioactive material which may result from an accident. The Reactor Enclosure and associated structures provide secondary containment during normal operation when the drywell is sealed and in service. At other times the drywell may be open and, when required, secondary containment integrity is specified.

Establishing and maintaining a vacuum in the reactor enclosure secondary containment with the standby gas treatment system in accordance with the Surveillance Frequency Control Program, along with the surveillance of the doors, hatches, dampers and valves, is adequate to ensure that there are no violations of the integrity of the secondary containment.

The OPERABILITY of the reactor enclosure recirculation system and the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA. The reduction in containment iodine inventory reduces the resulting SITE BOUNDARY and Control Room radiation doses associated with containment leakage. The operation of these systems and resultant iodine removal capacity are consistent with the assumptions used in the LOCA analysis. Provisions have been made to continuously purge the filter plenums with instrument air when the filters are not in use to prevent buildup of moisture on the adsorbers and the HEPA filters.

As a result of the Alternative Source Term (AST) project, secondary containment integrity of the refueling area is not required during certain conditions when handling irradiated fuel or during CORE ALTERATIONS and alignment of the Standby Gas Treatment System to the refueling area is not required. The control room dose analysis for the Fuel Handling Accident (FHA) is based on unfiltered releases from the South Stack and therefore, does not require the Standby Gas Treatment System to be aligned to the refueling area.

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The Standby Gas Treatment System is required to be OPERABLE when handling irradiated fuel, handling RECENTLY IRRADIATED FUEL, during CORE ALTERATIONS and during operations with a potential to drain the vessel with the vessel head removed and fuel in the vessel. Fuel Handling Accident releases from the North Stack must be filtered through the Standby Gas Treatment System to maintain control room doses within regulatory limits. The OPERABILITY of the Standby Gas Treatment System assures that releases, if made through the North Stack, are filtered prior to release.

INSERT

TS 3/4.6.5 BASES INSERT

Surveillances 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2 require verifying that one secondary containment personnel access door in each access opening is closed which provides adequate assurance that exfiltration from the secondary containment will not occur. An access opening contains at least one inner and one outer door. The intent is to not breach the secondary containment, which is achieved by maintaining the inner or outer personnel access door closed. Surveillances 4.6.5.1.1.b.2 and 4.6.5.1.2.b.2 provide an allowance for brief, inadvertent, simultaneous openings of redundant secondary containment personnel access doors for normal entry and exit conditions.