July 22, 2008

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Peter Bamford, Project Manager ***/ra/***
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 - ELECTRONIC TRANSMISSION, DRAFT REQUEST FOR ADDITIONAL INFORMATION REGARDING RELIEF REQUESTS ASSOCIATED WITH THE SECOND INSERVICE INSPECTION INTERVAL (TAC NOS. MD8071 THROUGH MD8078)

The attached draft request for additional information (RAI) was transmitted by electronic transmission on July 17, 2008, to Mr. Thomas Loomis, at Exelon Generation Company, LLC (Exelon). This draft RAI was transmitted to facilitate the technical review being conducted by the Nuclear Regulatory Commission (NRC) staff and to support a conference call with Exelon in order to clarify the licensee's submittal. The draft RAI is related to Exelon's submittal dated January 28, 2008, regarding relief requests associated with the second inservice inspection interval at Limerick Generating Station, Units 1 and 2. The draft questions were sent to ensure that they were understandable, the regulatory basis was clear, and to determine if the information was previously docketed. Additionally, review of the draft RAI would allow Exelon to evaluate and agree upon a schedule to respond to the RAI. This memorandum and the attachment do not represent an NRC staff position.

Docket Nos. 50-352 and 50-353

Enclosure: As stated

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REQUEST FOR ADDITIONAL INFORMATION

REGARDING RELIEF REQUESTS ASSOCIATED WITH THE

SECOND INSERVICE INSPECTION INTERVAL

LIMERICK GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-352 AND 50-353

By letter dated January 28, 2008 (Agencywide Documents Access and Management System Accession No. ML080370257), Exelon Generation Company, LLC (Exelon), submitted a set of relief requests (Relief Request (RR)-33, 34, 35, and 36) associated with the Second Inservice Inspection (ISI) interval for Limerick Generating Station (LGS), Units 1 and 2.

The Nuclear Regulatory Commission (NRC) staff and its contractor, Pacific Northwest National Laboratory, has been reviewing the submittal and has determined that additional information is needed to complete the review.

RR-33

None

RR-34

Background for RR-34, Request for Additional Information (RAI), number 1:

The submittal summarizes limited examinations performed during the second 10-year interval, and provides estimated coverage for each component. However, in order to show the impracticality of examining 100% of the American Society of Mechanical Engineers (ASME) Code-required volumes or surface areas, only general statements are included, such as:

a) *Due to nozzle-to-forging configuration, portions of the [ASME] code required examination volume could not be completely examined. The curvature of the radius of the nozzle forging is such that ultrasonic scanning of the weld is interrupted due to loss of contact of the ultrasonic search unit.*

b) *In support of ALARA [As Low As Reasonably Achievable], many of the nozzle-to-vessel welds, nozzle inside radius, and reactor vessel welds are examined by a remote automated scanner. These techniques, however, limit the examination coverage mainly because of the scanner design.*

c) *In addition to component configuration, certain weld examinations are further limited by reactor pressure vessel [RPV] design obstructions (such as RPV appurtenances) and mirror insulation.*

Specific limitations, or causes, for less than ASME Code-required coverage are briefly listed in Tables RR-34-01 through RR-34-04, but these are insufficient to demonstrate impracticality. For example, the recirculation nozzle-to-shell weld N2C in Table RR-34-01 lists "*N8A nozzle and nozzle configuration*," as the cause of only 52% coverage on this weld. It is unclear how nozzle N8A and the configuration of nozzle N2C specifically limit the examination for this weld, since no description of the ultrasonic scanning apparatus or further details of the suggested interference and nozzle geometry are provided.

In addition, in RR-34, Diagrams 1 and 2 are provided which are intended to depict areas of the RPV where scan limitations are encountered. However, the NRC staff is unable to determine the exact cause of the limitations, and to which weld each limitation is associated. Other diagrams are included in RR-34 to show typical nozzle weld configurations, however, these also do not provide sufficient information to enable the NRC staff to evaluate the welds under a basis of impracticality.

Based on this background discussion the NRC staff has the following RAI:

1.) Provide further detailed information to support the basis for each limited examination in RR-34, and therefore, demonstrate impracticality. This information should include detailed descriptions (with sufficient explanation, and lay-out or cross-sectional drawings/sketches) to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage.

Background for RR-34, RAI number 2:

The submittal states the following regarding the scheduling and completion of examinations for LGS, Unit 2, RPV shell welds and nozzle-to-vessel welds:

The Unit 2 inspection interval was reduced to three outages to align the start of the Unit 2 interval with the Unit 1 interval. The remainder of the second interval inspections for Unit 2 will be completed during the first period of the third interval, per Relief Request I3R-01, Request for Relief for Alternative Requirements for the Synchronization of Ten-Year ISI Intervals Between Units 1 and 2 for [ASME Code] *Class 1, 2, 3, MC, and CC Components, which was approved in accordance with 10 CFR 50.55a(a)(3)(i).*

2.) Confirm that all ASME Code-required RPV shell and nozzle weld examinations (originally scheduled for the former second interval, third period), as well as all third interval, first period examinations, will be completed during the first period of the third interval.

3.) State whether the methods used for the RPV shell weld and nozzle-to-vessel weld inspections in RR-34 have been qualified in accordance with performance demonstration requirements per ASME Code, Section XI, Appendix VIII.

4.) Provide descriptions of the ultrasonic techniques deployed for each weld examination volume (near surface, inner 15%, and full volume), and the amount of coverage obtained for each of these techniques. Also, please provide cross-sectional drawings showing scanning angle coverage. List the materials for the base metal and welds.

5.) As applicable, describe nondestructive examination (NDE) equipment, show accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

RR-35

Background for RR-35:

The submittal summarizes limited examinations performed during the second 10-year interval, and provides estimated coverage for each component. Some specific limitations, or causes, for less than ASME Code-required (100%) coverage are briefly listed in Tables RR-35-01 and RR-35-02, but these are insufficient to demonstrate impracticality.

Other diagrams are included in RR-35 to show typical pipe-to-valve and valve-to-flued head weld configurations, however, these also do not provide sufficient information to enable the staff to evaluate the welds under a basis of impracticality.

1.) Provide further detailed information to support the basis for each limited examination in RR-35, and therefore, demonstrate impracticality. This information should include detailed descriptions (with sufficient explanation, and lay-out or cross-sectional drawings/sketches) to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage.

2.) Provide descriptions of the ultrasonic techniques deployed for each weld examination volume (near surface, inner 15%, and full volume), and the amount of coverage obtained for each of these techniques. Also, please provide cross-sectional drawings showing scanning angle coverage. List the materials for the base metal and welds.

3.) As applicable, describe NDE equipment, show accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

4.) State whether the methods used for the various piping welds in RR-35 have been qualified in accordance with performance demonstration requirements per ASME Section XI, Appendix VIII.

5.) State whether any outside diameter surface feature, such as weld crown, diametrical weld shrinkage, or surface roughness conditions caused limited volumetric coverage during the subject piping weld examinations. Discuss the efforts that were used to correct these conditions.

RR-36

None (RR-36 will be requested to be withdrawn)