

May 6, 2011

MEMORANDUM TO: Robert D. Carlson, Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Nicholas J. DiFrancesco, Project Manager */RA/*
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: BYRON STATION, UNIT NO. 1 – RETRACTION OF VERBAL
AUTHORIZATION RELIEF REQUEST I3R-19 – ALTERNATIVE SEAL
WELDS REPAIR METHOD FOR REACTOR VESSEL HEAD
PENETRATIONS NOS. 31 AND 64 (TAC NOS. ME6061)

By letter dated March 24, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110830837), Exelon Generation Company, LLC (EGC, the licensee), requested relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," on the basis that the proposed alternatives would provide an acceptable level of quality and safety. A conference call between the U.S. Nuclear Regulatory Commission (NRC) staff and the licensee on March 28, 2011, and by memorandum dated March 29, 2011 (ADAMS Accession No. ML110840512), NRC provided verbal authorization for the repair of vessel head penetration (VHP) nozzles 64 and 76. Subsequently, on March 29, 2011, EGC identified additional indications in the Outside Diameter of Control Rod Drive Mechanism VHP Nos. 31 and 43 within the J-groove attachment weld on the underside of the reactor vessel head. On April 10, 2011, at 12:00 pm Eastern Daylight Time (EDT), by memorandum dated April 13, 2011 (ADAMS Accession No. ML110910380), NRC provided verbal authorization for alternative repair technique to repair the flaws in VHP Nos. 31 and 43.

By letter dated April 8, 2011 (ADAMS Accession No. ML111010578), and supplemented by letters dated April 10, 2011 (ADAMS Accession Nos. ML111010202 and ML111010199), EGC modified Relief Request I3R-19 by requesting relief from the ASME Code requirements of Section III, NB-4450, to eliminate mechanical discontinuities detected in the seal weld during initial installation. The letter dated April 8, identified multiple indications found by surface examination of the seal welds of VHP Nos. 31 and 64. NRC staff reviewed the licensee's submittal and determined that the proposed alternative will provide an acceptable level of quality and safety. During a conference call, on April 10, 2011, at 5:00 pm EDT, NRC provided verbal authorization (Enclosure 1) for repairs of seal welds associated with VHP Nos. 31 and 64 on the alternative to ASME Code, Section III, NB-4450 requirements.

On April 12, 2011, the NRC staff learned that the licensee had taken actions which differed from the scope of the relief request which had been verbally authorized. Based on the licensee's actions, the NRC staff rescinded the authorization. Justification of the NRC staff decision is provided in Enclosure 2.

April 10, 2011 (5:00 pm EDT) – Verbal Authorization Conference Call

NRC Participants:

R. D. Carlson
T. R. Lupold
J. Collins
N. J. DiFrancesco
D. Hills
A. Shaikh

Licensee Participants:

B. Jacobs
R. McIntosh
J. Langan
D. Gudger
R. Gesior
D. Benyak
J. Hansen
B. Newton
D. Anthony

April 12, 2011 (4:45 pm EDT) – Retraction of Authorization Conference Call

NRC Participants:

M. Mahoney
J. Collins
N. J. DiFrancesco
D. Hills
A. Shaikh
B. Bartlett
M. Holmberg
et. al.

Licensee Participants:

D. Gudger
J. Hansen
L. Schofield
D. Benyak
B. Jacobs
W. Feimster
G. S. Gerzen
G. DeBoo
H. Q. Do
R. McIntosh
J. Langan
et. al.

Docket No. 50-454

Enclosures:

1. Verbal Authorization Script from April 10, 2011
2. Staff Decision on Retraction of Authorization

R. Carlson

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ADAMS Accession No.: ML111020237 NRR-106

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VERBAL AUTHORIZATION FOR
RELIEF REQUEST I3R-19
RELIEF FOR REPAIR OF
SEAL WELDS ASSOCIATED WITH
REACTOR VESSEL HEAD PENETRATIONS NOS. 31 AND 64
BYRON STATION, UNIT NO. 1
TAC NO. ME6061

By letter dated April 8, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111010578), and supplemented by letters dated April 10, 2011 (ADAMS Accession No. ML111010202 and ML111010199, respectively), Exelon Generation Company, LLC (EGC, the licensee), modified Relief Request (RR) I3R-19 by requesting relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), requirements of ASME Code, Section III, NB-4450, to eliminate mechanical discontinuities detected in the seal weld during initial installation. Multiple flaws were identified by surface examination of the embedded flaw seal welds of vessel head penetration (VHP) Nos. 31 and 64.

The licensee requested relief to perform an alternative repair in lieu of the requirements of ASME Code, Section III, NB-4450, by welding over the flaws that are considered by the licensee to be mechanical discontinuities. The licensee identified flaw indications 1, 2, and 3 of VHP No. 31 and indications 1, 3, 6, 7, 8, and 9 of VHP No. 64 as mechanical discontinuities. The licensee stated that a radiological dose of 7 REM minimum could be avoided by using the automated welding process to repair the flaws versus the mechanical removal technique and verification of flaw removal required by ASME Code, Section III, NB-4450. By the letters dated April 10, 2011, EGC provided details of each new seal weld's area of coverage.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed EGC's proposed alternative for the flaw indications. NRC staff finds the radiological dose associated with the ASME Code, Section III, NB-4450, repair of each indication would be a hardship. Each flaw in the seal weld was located in an area of the seal weld covering the penetration nozzle below the J-groove weld or on an area of the seal weld covering the stainless steel cladding of the reactor pressure vessel head.

Therefore, given the sizes of the flaws and each new seal weld's area of coverage, the NRC staff finds the licensee's modified proposed alternative, RR I3R-19, provides reasonable assurance of structural integrity and leak tightness of VHP Nos. 31 and 64, complying with the requirements of ASME Code, Section III, NB-4450, for the flaws identified by EGC in the letter dated April 8, 2011, would result in hardship without a compensating increase in the level of quality and safety.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in Title 10 of the *Code of Federal Regulations*, Section 50.55a(a)(3)(ii). Therefore, pursuant to that regulation, the NRC staff provides verbal authorization for the modified proposed alternative RR I3R-19 for VHP Nos. 31 and 64 for the remainder of the third 10-year inservice inspection interval, which is scheduled to end on July 15, 2016.

RETRACTION OF
VERBAL AUTHORIZATION FOR
RELIEF REQUEST I3R-19
RELIEF FOR REPAIR OF
SEAL WELDS ASSOCIATED WITH
REACTOR VESSEL HEAD PENETRATIONS NOS. 31 AND 64
BYRON STATION, UNIT NO. 1
TAC NO. ME6061

On April 12, 2011, U.S. Nuclear Regulatory Commission (NRC) staff held a teleconference with Exelon Generation Company, LLC (EGC, the licensee) staff to rescind verbal authorization of Exelon's Relief Request (RR) I3R-19 as modified by letter dated April 8, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111010578), and letters dated April 10, 2011 (ADAMS Accession Nos. ML111010202 and ML111010199, respectively).

The cause for rescinding the authorization was the NRC staff finding that the relief was no longer applicable. The licensee performed mechanical grindings and a surface examination on each indication in penetration nozzles Nos. 31 and 64. The NRC staff has no issues with these actions as they would be the initial steps of repair within the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). However, the licensee's dye penetration surface examination noted changes in the indications in which some may have grown in size. The NRC staff also considered the radiological dose for both of these evolutions that were part of the hardship for which the licensee identified as a basis for relief. Therefore, the hardship for relief authorization had changed. Additionally, there was new information about the types of indications which may have changed the initial characterization. As such, the indications no longer meet the description provided for each as requested by the NRC staff to support the authorization of the licensee's RR.

The Office of Nuclear Reactor Regulation (NRR) staff including the Divisions of Operating Reactor Licensing and Component Integrity, in coordination with NRC Region III staff and NRC onsite inspectors, noted the relief was no longer applicable to the April 12, 2011, indications in penetration nozzles Nos. 31 and 64 at the Byron Station, Unit No. 1.

The NRC staff notes that related verbal relief authorizations associated with the nozzle overlays documented by memorandums dated March 28, 2011 and April 10, 2011 are unaffected.

Enclosure 2