UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 22, 2009

Mr. David A. Heacock
President and
Chief Nuclear Officer
Dominion Energy Kewaunee, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION – AUTHORIZATION OF PROPOSED ALTERNATIVE RR-1-11 REGARDING VISUAL EXAMINATIONS FOR REACTOR PRESSURE VESSEL BOTTOM-MOUNTED INSTRUMENT PENETRATIONS (TAC NO. ME1394)

Dear Mr. Heacock:

By letter dated May 28, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091520538),and supplemented by letter dated July 27, 2009 (ADAMS Accession No. ML092090296), Dominion Energy Kewaunee, Inc. (DEK), submitted for Nuclear Regulatory Commission (NRC) staff review and approval Request for Relief No. RR-1-11 for Kewaunee Power Station (KPS). The licensee proposed that the visual examinations performed on the reactor pressure vessel bottom-mounted instrument penetrations during the 2008 refueling outage provide an acceptable level of quality and safety as an alternative to performing the Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(ii)(E) initial inspections in the next refueling outage after January 1, 2009.

On September 16, 2009, the NRC staff verbally authorized the proposed alternative (see phone record at ADAMS Accession No. ML092600013). This letter and enclosed safety evaluation provide follow up to the verbal authorization.

As set forth in the enclosed safety evaluation, the NRC staff determined that the licensee's proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and has proposed an acceptable alternative to the 10 CFR 50.55a(g)(6)(ii)(E) requirements. Therefore, the NRC staff authorizes the licensee's proposed alternative until the KPS refueling outage currently scheduled for 2011.

If you have any questions, please contact the Project Manager, Mr. Peter Tam at 301-415-1451.

Sincerely,

Robert J. Pascarelli, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION

REQUEST FOR RELIEF NO. RR-1-11

KEWAUNEE POWER STATION

DOMINION ENERGY KEWAUNEE, INC.

DOCKET NO. 50-305

1.0 INTRODUCTION

By letter dated May 28, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091520538), and supplemented by letter dated July 27, 2009 (ADAMS Accession No. ML092090296), Dominion Energy Kewaunee, Inc., (DEK) submitted for Nuclear Regulatory Commission (NRC) staff review and approval Request for Relief No. RR-1-11 for Kewaunee Power Station (KPS). The licensee proposed that the visual examinations performed on the reactor pressure vessel (RPV) bottom-mounted instrument (BMI) penetrations during the 2008 refueling outage provide an acceptable level of quality and safety as an alternative to performing the Title 10 of the *Code of Federal Regulations* (10 CFR) CFR 50.55a(g)(6)(ii)(E) initial inspections in the next refueling outage after January 1, 2009.

2.0 REGULATORY REQUIREMENTS

Pursuant to 10 CFR 50.55a(g)(4), American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10 year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in Title 10 *Code of Federal Regulations* (10 CFR) 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ASME Code of record for the KPS fourth 10-year ISI interval program is the 1998 Edition with 2000 Addenda of Section XI of the ASME Code. The regulation at 10 CFR 50.55a also contains augmented inspection requirements. One of these augmented inspection requirements is given in CFR 50.55a(g)(6)(ii)(E).

Pursuant to 10 CFR 50.55a(a)(3), alternatives to requirements may be authorized by the NRC if the licensee demonstrates that: (i) the proposed alternatives provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee submitted the subject request for authorization of an alternative, pursuant to 10 CFR 50.55a(a)(3)(i), which proposed to use previous bare metal visual examinations of the RPV BMI penetrations to meet the examination requirements of 10 CFR 50.55a(g)(6)(ii)(E).

3.0 TECHNICAL EVALUATION

ASME Code Case N-722, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials, Section XI, Division 1," is mandated by NRC as an augmented ISI requirement in 10 CFR 50.55a(g)(6)(ii)(E). ASME Code Case N-722 requires, in part, that bare metal visual (BMV) inspection of BMI nozzles are performed every other refueling outage. Footnote 1 to 10 CFR 50.55a(g)(6)(ii)(E) requires that the initial BMI inspections be performed at the next refueling outage after January 1, 2009.

10 CFR 50.55a(g)(6)(ii)(E) requires that:

> "All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N-722 subject to the conditions specified in 10 CFR 50.55a(g)(6)(ii)(E)(2) through (4) of this section. The inspection requirements of ASME Code Case N-722 do not apply to components with pressure retaining welds fabricated with Alloy 600/82/182 materials that have been mitigated by weld overlay or stress improvement."

DEK proposed that the previously completed bare metal visual examinations of the RPV BMI penetrations completed during the 2008 KPS refueling outage serve as an acceptable alternative to the BMV examinations required to be performed by ASME Code Case N-722 and footnote 1 to 10 CFR 50.55a(g)(6)(ii)(E) during the next refueling outage after January 1, 2009. Thus, the bare metal visual examinations performed during the 2008 refueling outage for KPS will be considered the initial examinations to meet the 10 CFR 50.55a(g)(6)(ii)(E) footnote requirements for the performance of the initial examinations.

The next BMV examinations would then be performed at the required examination frequency (every other refueling outage) with the next examination required during the KPS refueling outage scheduled to occur in 2011.

In accordance with previous commitments made in response to NRC Bulletin 2003-02, DEK has completed BMV examinations of the RPV BMI penetrations during each of the previous three (3) refueling outages (i.e., in 2004, 2006, and 2008).

The visual examinations completed in 2004 and 2006 used VT-3 techniques with 100 percent coverage. No indications were observed during these VT-3 examinations. Additionally, the bottom region of the RPV was also subjected to VT-2 examinations during the 2004 and 2006 refueling outages with the reactor at nominal operating pressure and temperature. No indications of leakage were observed during the VT-2 examinations.

RPV BMI penetration visual examinations were also completed in the 2008 refueling outage with 100% coverage. No indications were observed during these examinations. These examinations were performed by personnel that met the personnel training and qualification requirements as described in Enclosure 1 to the submittal, "Examiner Qualification and Resolutions Requirements." In addition, the bottom region of the RPV was also subjected to VT-2 examinations during the 2008 refueling outage with the reactor at nominal operating pressure and temperature.

Completion of the aforementioned examinations ensures an acceptable level of quality and safety in that:

1. The examiners were qualified to VT-1, VT-2, VT-3 and Visual Examination (VE) requirements (2008 refueling outage),

2. The BMV examinations in 2008 were performed to VE requirements including knowledge of Electric Power Research Institute (EPRI) Report 1006296, Revision 2, "Visual Examination for Leakage of PWR Reactor Head Penetrations," dated March 2003.

3. 100 percent coverage was obtained during the examinations,

4. Visual examinations have been performed over a span of time and the frequency of these examinations exceed the requirements of ASME Code Case N-722, and

5. The previously completed visual examinations have shown the BMI penetrations are free from any indication of leakage or corrosion.

DEK has scheduled a VT-2 examination of the RPV BMI penetrations during startup from the 2009 refueling outage.

Based on the above, DEK requests that the proposed alternative to the requirement of footnote 1 to 10 CFR 50.55a(g)(6)(ii)(E), which would require the performance of a BMV examination of the RPV BMI penetrations during the next refueling outage after January 1, 2009, be accepted.

The proposed alternative is based on the previous performance of BMV examinations during the 2008 refueling outage with no indication of leakage and the required frequency of examination Item B15.80 specified in ASME Code Case N-722. The KPS RPV BMI penetrations have repeatedly shown (in examinations during the 2004, 2006, and 2008 refueling outages), no indications of leakage. Furthermore, the frequency for performing the Item B15.80 inspection in ASME Code Case N-722 is every other refueling outage. Therefore, the proposed alternative to accept the 2008 examination as the initial examination and change the next required BMV examination of the RPV BMI penetrations to the 2011 outage provides an acceptable level of quality and safety. In addition, DEK is scheduled to perform a VT-2 examination of the RPV BMI penetrations during startup from the 2009 refueling outage.

The examiners that performed the RPV BMI penetration examinations during the 2008 refueling outage held current VT-1, VT-2 (non-alternative) and VT-3 qualifications. Each of the examiners successfully completed Boric Acid Corrosion Control (BACC) Inspector Training. In addition to BACC training, each of the examiners was required to review EPRI Technical

Report 1006296, Revision 2. Completion of these training activities has been determined to be equivalent to the four (4) hours of additional training cited in ASME Code Case N-722. Based upon the above, the qualifications of the examiners during the 2008 refueling outage are considered equivalent to the personnel qualification requirements of ASME Code Case N-722.

The RPV BMI penetration BMV examinations performed during the 2008 refueling outage were performed in the following manner:

- a direct visual examination was performed with the insulation removed and no limitations;
- the distance used for these examinations was at a distance not greater than 4 feet;
- the illumination was sufficient to allow resolution of lower case characters having a height of not greater than 0.105 inches.

These requirements are the same as the distance and resolution requirements contained in ASME Code Case N-722 for VEs. Based upon the above, the BMV examinations of the KPS BMI nozzle penetrations during the 2008 refueling outage are considered equivalent to the resolution requirements of ASME Code Case N-722.

The regulation at 10 CFR 50.55a(g)(6)(ii)(E) requires that, "All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N-722 subject to the conditions specified in 10 CFR 50.55a(g)(6)(ii)(E)(2) through (4) of this section." The licensee has proposed as an alternative to the requirements in 10 CFR 50.55a(g)(6)(ii)(E) that inspections performed in 2008 be considered the initial inspections to meet the 10 CFR 50.55a(g)(6)(ii)(E) footnote requirements for the performance of the initial inspection.

4.0 CONCLUSION

By letter dated May 28, 2009, as supplemented by letter dated July 27, 2009, DEK proposed its fourth 10-Year Interval Inservice Inspection Program Request for Relief No. RR-1-11 for KPS. In this submittal, the licensee compared its inspection procedure and inspector qualification requirements used for the examinations of the RPV BMI penetrations during the 2008 refueling outage to those outlined in ASME Code Case N-722. The licensee noted that it had inspected the KPS BMI penetrations in examinations during the 2004, 2006, and 2008 refueling outages and found no indications of leakage, or signs corrosion or boric acid residue. The licensee also noted that it examined all of the KPS BMI penetrations for KPS during 2008 refueling outage and that this approach was equivalent with the requirements of Table 1 of ASME Code Case N-722.

The NRC staff reviewed the licensee's comparison of the inspection procedure and inspector qualification requirements to the ASME Code Case N-722 footnote requirements, and determined that the licensee's inspection procedure and inspector qualification was equivalent to each requirement in ASME Code Case N-722. Therefore, the NRC staff determined that the licensee's proposed alternative to credit the BMV examinations performed during the 2008 refueling outage for KPS met the ASME Code Case N-722 footnotes and 10 CFR 50.55a(g)(6)(ii)(E) requirements and provides an acceptable level of quality and safety. DEK will, therefore, continue to comply with the requirements of 10 CFR 50.55a(g)(6)(ii)(E) by performing the next scheduled BMV examination of the KPS BMI penetrations during the unit's 2011 refueling outage.

As set forth above, the NRC staff determined that the licensee's proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and has proposed an acceptable alternative to the 10 CFR 50.55a(g)(6)(ii)(E) requirements. Therefore, the NRC staff authorizes the licensee's proposed alternative until the KPS refueling outage currently scheduled in 2011.

Principal Contributor: Edward V. Andruszkiewicz, NRR/DCI

Date: December 22, 2009

If you have any questions, please contact the Project Manager, Mr. Peter Tam at 301-415-1451.

Sincerely,

/RA/

Robert J. Pascarelli, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure:
Safety Evaluation

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