



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

RELIEF REQUEST RR13, REVISION 1

PENNSYLVANIA POWER AND LIGHT COMPANY

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-388

1.0 INTRODUCTION

The Technical Specifications (TSs) for Susquehanna Steam Electric Station, Unit 2, states that the inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would 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.

Pursuant to 10 CFR 50.55a(g)(4), 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 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 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Susquehanna Steam Electric Station, Unit 2, second 10-year inservice inspection (ISI) interval is the 1989 Edition.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement.

ENCLOSURE

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After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

In a letter dated October 28, 1996, Pennsylvania Power and Light Company (the licensee), submitted to the NRC its Second Ten-Year Inservice Inspection Interval Program Plan Relief Request RR-13, regarding successive examination requirements. The licensee revised its original request for relief and submitted Relief Request RR-13, Revision 1, in its letter dated November 27, 1996. In addition, the licensee provided additional information in its letter dated April 8, 1997.

2.0 EVALUATION

The staff, with technical assistance from its contractor, the Idaho National Engineering and Environmental Laboratory (INEEL), has evaluated the information provided by the licensee in support of its Second 10-Year Inservice Inspection Interval Program Plan Relief Request RR-13, Revision 1, for Susquehanna Steam Electric Station, Unit 2. Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the Technical Letter Report (TLR) attached.

In Relief Request RR-13, Revision 1, the 1989 Edition of the Code, IWB-2420(a), Successive Examination Requirements requires that the sequence of examinations established during the first inspection interval be repeated during each successive inspection interval to the extent practical. Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed an alternative to the ASME Section XI scheduling requirements for the following reactor pressure vessel examination areas:

- Vertical Welds BD, BE, BF, BN;
- Circumferential Welds AB and AC; and
- Nozzle welds and inner radius sections for Nozzles N2J, N3A, N3B, N5A, and N5B.

In part, the schedule modification is being requested due to a change in the refuel cycle (2 years versus 18 months). In addition, rescheduling of the examination areas prior to the implementation of water treatment (hydrogen water chemistry) will reduce radiation exposure in compliance with ALARA goals.

Based on the review of the request for relief, the staff determined that:

- Under the proposed rescheduling, the frequency for the subject examination areas will not exceed 10 years except where a 1-year extension as allowed by IWB-2412 is implemented.

- In the case of Examination Category B-D, the licensee's modified schedule for examination of the RPV nozzles (41% in the 1st period, 51% in the 2nd period, and 100% in the 3rd period) does not deviate significantly from the percentage criteria of the Code (16% to 34% in the first period, 50% to 66% in the second period, and 100% in the third period). The licensee will exceed the percentage requirement for the first period only.

Because the licensee will not exceed 10 years between examinations (except for an extended interval), the rescheduling results in an insignificant deviation from Code examination period percentage requirements and the proposed examination coverage is sufficient to provide assurance that degradation will be detected, the staff finds that the proposed schedule modification provides an acceptable level of quality and safety.

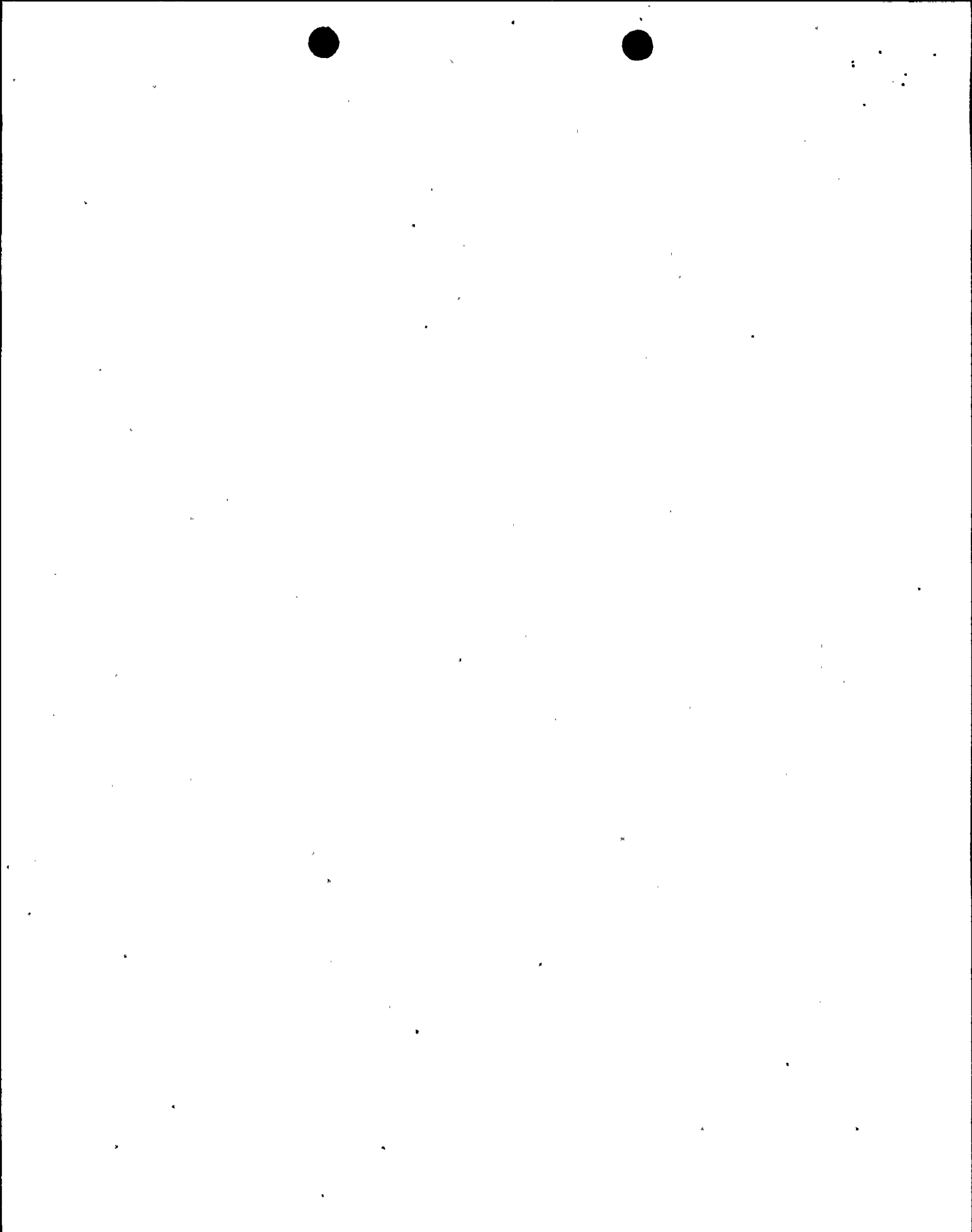
3.0 CONCLUSIONS

The staff concludes that the licensee's schedule modification will not cause the frequency between examinations to exceed 10 years (except for an extended interval). In addition, the licensee will not deviate significantly from the Code's percentage of examination requirements for each period for Examination Category B-D and the proposed examination coverage is adequate. Thus, the licensee's proposed alternative to the successive examination requirements of the Code for the subject examination areas provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is authorized.

Attachment: Technical Letter Report

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TECHNICAL LETTER REPORT
ON THE SECOND 10-YEAR INSERVICE INSPECTION INTERVAL
RELIEF REQUEST RR-13, REVISION 1
FOR
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2
PENNSYLVANIA POWER & LIGHT COMPANY
DOCKET NO. 50-388

1.0 INTRODUCTION

By letter dated October 28, 1996, Pennsylvania Power & Light Company (PP&L) submitted Relief Request RR-13 for the Susquehanna Steam Electric Station, Unit 2. By letter dated November 27, 1996, the licensee submitted Revision 1 to Relief Request RR-13. In a letter dated April 8, 1997, the licensee provided additional clarification in support of the request. The Idaho National Engineering and Environmental Laboratory (INEEL) staff has evaluated the subject request for relief in the following section.

2.0 EVALUATION

The Code of record for the Susquehanna Steam Electric Station, Unit 2, second 10-year inservice inspection (ISI) interval, which began June 1, 1994, is the 1989 Edition of the *American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI*. The information provided by the licensee in support of the request for relief from Code requirements has been evaluated and the basis for disposition is documented below.

Relief Request RR-13, Revision 1, IWB-2420(a), Successive Examination Requirements

Code Requirement: IWB-2420(a) requires that the sequence of examinations established during the first inspection interval be repeated during each successive inspection interval to the extent practical.

Licensee's Proposed Alternative: Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed an alternative to the ASME Section XI scheduling requirements for the following reactor pressure vessel examination areas:

- Vertical Welds BD, BE, BF, BN;
- Circumferential Welds AB and AC; and
- Nozzle welds and inner radius sections for Nozzles N2J, N3A, N3B, N5A, and N5B.

The licensee stated:

"For the components affected by this relief request, scheduling of examinations will be allowed to deviate from the requirement of Paragraph IWX-2420(a)."

ATTACHMENT

Licensee's Basis for the Proposed Alternative (as stated):

"There are a variety of situations which make the requirements of Paragraph IWX-2420(a) a hardship and/or impractical to implement. These situations are discussed in detail herein.

"The fuel cycle for both SSES Units 1 and 2 has been changed from an 18 month fuel cycle to a 24 month fuel cycle beginning with the 9th cycle on Unit 2. This change in fuel cycles affects the established refueling outage sequence outages needed to accomplish required ISI program nondestructive examinations and, alters how the refueling outages fall within a particular inservice inspection period. SSES Unit 2 has one less refueling outage. Five refueling outages for the second inservice inspection interval versus six for the first interval in which to complete the nondestructive examinations necessary to satisfy the Unit 2 ISI program commitments. Given anticipated outage duration of 28 to 45 days, an increased inspection workload (as compared to previous outages) may not fit into the allotted inspection windows resulting in costly extended outages. Deviation from the requirements of Paragraph IWX-2420(a) for select components will allow the examination to meet the demands of the second inservice inspection interval and to optimize the examination efficiency.

"Examination schedules during the first inservice inspection interval were done without the taking into account of successive inspection scheduling. The greater flexibility allowed to be deferred to alternate outages to accommodate for special circumstances such as ALARA/access provisions or special outage work planning. These circumstances may no longer exist for the second interval. Also, experience gained during the first interval may indicate that the first interval scheduling was not the most efficient scheduling of examination or resources. For example, it is more efficient to ultrasonically examine several welds of the same pipe size requiring the same site support (scaffolding, insulation removal, etc.) at the same time rather than distributing the welds over several periods to parallel the first interval. Note that the first interval scheduling may have been done so to accommodate a unique set of circumstances that no longer affect the examinations. Deviation from the requirements of Paragraph IWX-2420(a) will allow second interval scheduling of examination to take advantage of lessons learned from the first interval and/or make the most efficient use of inspection resources.

"By reallocating the examinations listed above, we believe that we can significantly reduce personnel radiation exposure associated with performing the exams by as much as 30 man-rem. This reduction can be realized because we are performing these inspections prior to the introduction of hydrogen water chemistry (HWC) to SSES Unit 2. Additionally, cost savings will be realized by reducing by one outage the setup of the GE GERIS inspection system.

"Selective deviation from the Code successive inspection requirements does not affect plant quality of safety. The intent of the successive inspection requirements is to preclude components from being examined too soon after a previous examination or from exceeding ten years between examinations. In this situation we feel that it is more conservative from a Nuclear Safety perspective to examine these welds earlier than ten years versus extending them past the ten year interval between inspections. Also of note is that the majority of SSES Unit 2 components selected for examination during the second inservice interval do comply with Paragraph IW-2420(a) providing examination results over time which meet the intent of Section XI."

In the licensee's response to the NRC request for additional information dated April 8, 1997, the licensee confirmed that no more than 10 years would elapse between examinations. In addition, the percentages of examinations completed each period for Examination Category B-D will be as follows: 1st period - 41%, 2nd period - 51%, and 3rd period - 100%.

Evaluation: The licensee has proposed the rescheduling of examination areas associated with the reactor pressure vessel to optimize scheduling efficiency and use of resources. In part, the schedule modification is being requested due to a change in the refuel cycle (2 years versus 18 months). In addition, rescheduling of the examination areas prior to the implementation of water treatment (hydrogen water chemistry) will reduce radiation exposure in compliance with ALARA goals.

Based on the review of the request for relief, it is concluded that:

- Under the proposed rescheduling, the frequency for the subject examination areas will not exceed 10 years except where a 1-year extension as allowed by IWB-2412 is implemented.
- In the case of Examination Category B-D, the licensee's modified schedule for examination of the RPV nozzles (41% in the 1st period, 51% in the 2nd period, 100% in the 3rd period) does not deviate significantly from the percentage criteria of the Code (16% to 34% in the first period, 50% to 66% in the second period, and 100% in the third period). The licensee will exceed the percentage requirement for the first period only.

Because the licensee will not exceed ten years between examinations (except for an extended interval) and the rescheduling results in an insignificant deviation from Code examination period percentage requirements, the INEEL staff believes that the proposed schedule modification will provide an acceptable level of quality and safety.

3.0 CONCLUSION

The licensee's proposed rescheduling of examination areas for the second interval is intended to allow efficient use of resources and minimize radiation exposure. The licensee's schedule modification will not cause the frequency between examinations to exceed 10 years (except for an extended interval). In addition, the licensee will not deviate significantly from the Code's percentage of examination requirements for each period for Examination Category B-D. As a result, it is concluded that the licensee's proposed alternative to the successive examination requirements of the Code for the subject examination areas provides an acceptable level of quality and safety.

Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), it is recommended that the licensee's proposed alternative be authorized.