

October 22, 2001

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: **Docket Nos. 50-361 and 50-362**
Second Ten-Year Interval Inservice Inspection Program
Reactor Pressure Vessel Examinations
San Onofre Nuclear Generating Station, Units 2 and 3

- References: 1) Letter from A. E. Scherer (SCE) to the Document Control Desk (NRC) dated June 29, 2001; Subject: Docket Nos. 50-361 and 50-362, Second Ten-Year Interval Inservice Inspection Program, Reactor Pressure Vessel Examinations, San Onofre Nuclear Generating Station Units 2 and 3
- 2) Federal Register: September 22, 1999 (Volume 64, Number 183) 10 CFR Part 50 Industry Codes and Standards; Amended Requirements; Final Rule [Page 51370]

Gentlemen:

This letter provides two revised relief requests (RRs) to the NRC ASME Code requirements for the reactor pressure vessel (RPV) examinations for use at San Onofre Nuclear Generating Station Units 2 and 3. These revised RRs provide clarifying information and replace RRs B-2-02 and B-2-03 submitted by reference 1. These revised RRs, provided as Enclosures 1 and 2, are the following:

<u>Enclosure</u>	<u>Relief Request</u>	<u>Summary Description</u>
1	RR B-2-02, Rev. 1	Examination Category B-D: Reduced weld volume of 1/2 inch from the Weld.
2	RR B-2-03, Rev. 1	Examination Category B-J: RPV Piping Nozzle Ultrasonic Testing from the Inside Surface.

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Relief is requested from specific requirements of Subsection IWB in accordance with 10 CFR 50.55a (a)(3). Relief is requested because the existing Inservice Inspection program at San Onofre Units 2 and 3 provides an acceptable level of quality and safety. Additionally, compliance with the ASME Code requirements results in a hardship and an unusual difficulty without a compensating increase in the level of quality and safety. The specific reasons are provided in each individual request. It is noted that the NRC has approved these relief requests for other plants.

The revised relief requests:

- 1) Revise the applicability of B-2-03 to Unit 2 only.
- 2) Clarify the inspection volume of the alternative examination requested in RR B-2-02.
- 3) Clarify that the specific ASME Code Section requested to be used for the alternative examination under RR B-2-02 is "Examination Category B-D, Full Penetration Welds of Nozzles in Vessels, Code Item B3.90, Figures IWB-2500-7 (a) and (b) for defining the examination volume and Article 4 of Section V for the Ultrasonic (UT) examination."
- 4) Indicate that in RR B-2-02 the requested relief from the $t_r/2$ examination volume requirements of ASME Section XI, Figures IWB-2500-7 (a) and (b) is for San Onofre Units 2 and 3 second 10-year interval.
- 5) Indicate that in RR B-2-02 the request for relief from ASME Section V, Article 4 for the performance of the required volumetric examinations as specified in Table IWB-2500-1 Category B-D, Code Item B3.90, is requested for the San Onofre Unit 2 second 10-year interval, reactor pressure vessel examinations.
- 6) Indicate that RR B-2-03 is only required until Supplement 12 to Appendix VIII of Section XI, Division 1, 1995 Edition with 1996 Addenda of the ASME Boiler and Pressure Vessel Code addresses internal diameter examinations and is implemented. Supplement 12 is currently scheduled to be implemented on November 22, 2002, per reference 2.

These relief requests are needed to support the Unit 2 Cycle 12 refueling outage, which is scheduled to begin in May of 2002. To support planning activities for the reactor pressure vessel examinations that will be performed during the Unit 2 Cycle 12 refueling outage, your approval by January 1, 2002 would be greatly appreciated.

If you have any questions or need additional information regarding this matter, please feel free to contact me or Mr. Jack Rainsberry at (949) 368-7420.

Sincerely,

A handwritten signature in black ink, appearing to read "E. W. Merschoff". The signature is fluid and cursive, with the first name being the most prominent.

Enclosures

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
M. L. Scott, NRC Project Manager, San Onofre Units 2, and 3
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3

**Enclosure 1
Units 2 and 3
Relief Request
RR B-2-02,
Revision 1**

San Onofre Nuclear Generating Station
Units 2 and 3
Second Ten-Year Interval
ISI RELIEF REQUEST RR B-2-02, Revision 1

COMPONENT DESCRIPTION:

San Onofre Units 2 and 3, Class 1 Reactor Pressure Vessel (RPV) Nozzle-to-Vessel welds.

ASME CODE CLASS:

ASME Section XI Class 1

ASME EXAMINATION REQUIREMENTS:

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with no Addenda; Table IWB-2500-1, Examination Category B-D, Full Penetration Welds of Nozzles in Vessels, Code Item B3.90, Figures IWB-2500-7 (a) and (b) for defining the examination volume and Article 4 of Section V for the Ultrasonic (UT) examination.

In addition, Southern California Edison (SCE) had committed in the second interval Inservice Inspection Program (Reference 1) to implement Alternative A to Regulatory Guide 1.150, Rev. 1 "Ultrasonic Testing Of Reactor Pressure Vessel (RPV) Welds During Preservice and Inservice Examinations" as regulatory guidance for the UT examination of RPV welds.

RELIEF REQUESTED:

- 1) Pursuant to 10CFR50.55a(a)(3)(i), SCE requests relief from the $t_s/2$ examination volume requirements of ASME Section XI, Figures IWB-2500-7 (a) and (b). This relief is requested for the San Onofre Units 2 and 3 second 10-year interval.
- 2) Additionally, SCE requests relief from ASME Section V, Article 4 for the performance of the required volumetric examinations as specified in Table IWB-2500-1 Category B-D, Code Item B3.90, of the 1989 Edition with no Addenda of ASME Section XI. This relief is requested for the San Onofre Unit 2 second 10-year interval, reactor pressure vessel examinations, which are scheduled to occur at Unit 2 in May of 2002.

After November 22, 2002, SCE will perform the examinations using Supplement 7 to Appendix VIII of Section XI, Division 1, 1995 Edition with 1996 Addenda of the ASME Boiler and Pressure Vessel Code. Relief from the $t_s/2$ examination volume requirements is requested for the remainder of the second ten-year interval.

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BASIS FOR RELIEF:

San Onofre Units 2 and 3 are currently required to perform in-service examinations of selected welds in accordance with the requirements of 10CFR50.55a, Plant Technical Specifications, and the 1989 Edition with no Addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Rules for In-Service Inspection of Nuclear Power Plant Components. The Code invokes the ($t_w/2$) examination volume requirements of Figures IWB-2500-7 (a) and (b).

The examination volume for the RPV pressure retaining nozzle-to-vessel welds extend far beyond the weld into the base metal, and is unnecessarily large. This extends the examination time significantly, and results in no net increase in safety, as the area being examined is a base metal region which is not prone to in-service cracking and has been extensively examined during construction, pre-service examination, and during the first in-service examinations with acceptable results.

The implementation of this request for relief would reduce the examination volume next to the widest part of the weld from half of the vessel wall thickness to one-half ($1/2$) inch from the weld. This reduction is applicable to base metal examination volume that was extensively interrogated during the construction and preservice inspections and is not located in the high stressed areas of the nozzle-to-vessel weld. The high stressed areas are included in the examination volume as defined above and are subject to examination.

The UT examination of the RPV vessel-to-nozzle weld will be performed both from the vessel shell and from the nozzle bore to ensure full code required through volume examination coverage. The portion of the examination from the vessel shell will be conducted utilizing Appendix VIII Supplements 4 and 6 as amended by the Final Rule in Federal Register Notice 64FR 51370 dated September 22, 1999 in lieu of Article 4 of Section V, which will allow SCE to use a Performance Demonstration Initiative (PDI) qualified procedure, personnel, and equipment for the examination.

In addition to the examination from the vessel wall, a UT examination from the nozzle bore will be performed per the requirements of Article 4 of Section V and the subsequent guideline requirements of Regulatory Guide 1.150 Rev 1. Currently there are no PDI qualified procedures for the bore examination of the nozzle to vessel weld. The Final Rule requires implementation of Appendix VIII Supplement 7 "Qualification Requirements for Nozzle-To-Vessel Weld" by November 22, 2002. In Supplement 7 and as amended in the Final Rule, both Supplements 4 and 6 will be required at that time.

The use of a qualified UT procedure implementing Supplements 4 and 6 for the portion of the examinations conducted from the vessel shell will save time on the RPV since this would be the same procedure and set up as used for the adjacent welds.

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Recently, the NRC granted similar relief to Salem Generating Station, Unit 1. (Reference 2).

ALTERNATIVE EXAMINATIONS:

For San Onofre Units 2 and 3, SCE proposes to use the reduced volume of one-half ($\frac{1}{2}$) inch from the widest part of the weld, in lieu of the requirements of ASME Section XI Figures IWB-2500-7 (a) and (b). This proposed inspection volume is consistent with the weld volume as indicated in Figures 1, 2, and 3 of the Committee Correspondence letter dated October 23, 2000 from W. Norris to the ASME Subgroup Water-Cooled Systems (Reference 3). It is requested that this relief be in effect until the end of the second ten-year interval.

SCE proposes to use the alternative requirements defined above in lieu of ASME Section V, Article 4 for the performance of the required volumetric examinations as specified in Table IWB-2500-1 Category B-D, Code Item B3.90, of the 1989 Edition with no Addenda of ASME Section XI. This relief is requested only for the San Onofre Unit 2 second ten-year interval, reactor pressure vessel examinations, which are scheduled to occur in May of 2002. For reactor pressure vessel exams at Unit 3, SCE will use Supplement 7 to Appendix VIII of Section XI, Division 1, 1995 Edition with 1996 Addenda of the ASME Boiler and Pressure Vessel Code which is scheduled to be implemented on November 22, 2002.

SCE will perform examinations in accordance with ASME Code, Section XI, Div. 1, 1995 Edition, 1996 Addenda, Appendix VIII Supplement 4 and 6 as amended by the Federal Register Notice 64FR 51370 dated September 22, 1999, for the portion of the examination conducted from the vessel shell. For the examination conducted from inside the vessel, the inner volume will be examined to a minimum depth of 15% in four orthogonal directions with personnel and procedures qualified in accordance with Supplement 4, as modified by the rule, and the volume not examined according to Supplement 4 will be examined from the nozzle bore.

The extent of examination coverage proposed, along with the demonstrated ultrasonic technique and periodic system pressure tests, will provide added assurance that the Reactor Vessel welds have remained free of service related flaws, therefore providing an acceptable level of quality and safety.

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REFERENCES

- 1) Letter from W. C. Marsh (SCE) to the Document Control Desk (NRC), dated October 4, 1993; Subject: Docket Nos. 50-361 and 50-362, ASME Code Update for the Second Ten Year Interval, Inservice Inspection Programs, San Onofre Nuclear Generating Station, Units 2 and 3
- 2) Letter from J. Clifford (NRC) to H. W. Keiser (PSEG Nuclear) dated April 26, 2001; Subject: Salem Nuclear Generating Station, Unit No. 1 - Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval, Relief Request RR-B8 (TAC No. MB1228)
- 3) Committee Correspondence from W. E. Norris (NRC) to K.B. Thomas (Subgroup Water-Cooled Systems) dated October 23, 2000; Subject: Proposed Revision to Code Case N-613, "Ultrasonic Examination of Full Penetration Nozzles, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Vessel-to-Nozzle Welds, Fig. IWB-2500-7(a), (b), and (c), Section XI, Division 1"

**Enclosure 2
Unit 2 Only
Relief Request
RR B-2-03,
Revision 1**

San Onofre Nuclear Generating Station
Unit 2
Second Ten-Year Interval
ISI RELIEF REQUEST RR B-2-03, Revision 1

COMPONENT DESCRIPTION:

San Onofre Unit 2, Class 1, Category B-J Pressure Retaining Piping welds attaching the Reactor Pressure Vessel (RPV) Nozzle to extension piece and extension piece to pipe weld.

ASME CODE CLASS:

ASME Section XI Class 1

ASME EXAMINATION REQUIREMENTS:

The 1999 Edition of 10 CFR 50.55(a) Codes and Standards was revised by Federal Register Notice 64 FR 51400, September 22, 1999. This revision requires that ASME Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1995 Edition with 1996 Addenda, Appendix VIII, Supplement 3 for Ferritic piping welds be implemented by May 22, 2000.

RELIEF REQUESTED:

Pursuant to 10CFR50.55a(a)(3)(ii), SCE requests relief from ASME Section XI, Appendix VIII Supplement 3 for piping welds to be examined from the inside surface. This relief request is required for San Onofre Unit 2 second 10-year interval, reactor pressure vessel examination, which is scheduled to occur in May of 2002. After November 22, 2002, SCE will use the Performance Demonstration Initiative (PDI) procedures for inside diameter (ID) examinations. PDI intends to address ID examinations for welds covered by Supplement 3 with Supplement 12 to Appendix VIII of Section XI, Division 1, 1995 Edition with 1996 Addenda of the ASME Boiler and Pressure Vessel Code.

BASIS FOR RELIEF:

The subject welds are located inside the primary shield and reactor cavity. Welds are difficult to access. The ultrasonic testing (UT) examination from the outside surface examination would be severely limited. Limitations from the pipe outside diameter (OD) would be due to the close proximity of two welds: RPV nozzle to extension piece weld and the extension piece to pipe or elbow weld. There are currently no Appendix VIII qualified personnel or procedures for performing piping

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weld examinations from the inside surface. In lieu of doing the Appendix VIII, Supplement 3 UT examinations from the pipe OD, SCE requests relief to continue the past practice of performing the UT examination from the ID. This will be done in conjunction with our 10-year vessel examination, utilizing current industry technology. This will reduce the examination limitations by employing the UT from the ID. The ID examination would reduce the radiation dose. To perform the UT examination from the outside surface those performing the manual examinations (and supports such as builders of scaffolding, removal of insulation, preparing and cleaning the welds, fire watch, health physics among others) would be exposed to a dose rate of 250 to 8000 mRem/Hr. The estimated number of hours required of these examinations, as documented in Section 3.3.2.4 of the 2nd Interval Inservice Inspection Program (Reference 1) are as follows: Build scaffolding: 64 hours, remove insulations: 32 hours, weld preparation: 48 hours, non-destructive examinations for 24 welds: 96 hours, reinstall insulations: 32 hours and remove scaffolding: 32 hours. The total man-hours are 304. Using an effective dose rate of 0.25 R/Hr for work directly on the welds and 0.040 R/Hr for work away from the welds, the estimated dose is 27 Person-Rem.

The concept of personnel performance demonstrations for ultrasonic examination qualifications was introduced to the nuclear industry in the 1989 Edition, 1989 Addenda, of Section XI. The PDI was formed in 1991 to implement the requirements of Appendix VIII. When the PDI proposed an alternative implementation schedule, during the public comment period, it did not consider the ID surface examinations of Category B-J welds performed from the ID surface.

Qualifications for piping examinations from the OD surface were initiated in 1994. Examinations from the ID surface were considered in the design and fabrication of piping samples. However, it was the intention of PDI to complete the piping qualifications that are performed from the ID surface, in conjunction with the nozzle-to-shell and dissimilar metal welds. These examinations are normally performed using the RPV examination device. A stand-alone qualification for the one or two Category B-J welds past the RPV nozzle will require additional qualification specimens, which are not currently available. Performing separate qualifications at this time, and later returning to perform the nozzle and dissimilar metal weld qualifications places an undue burden on the vendors and owners.

Our vendor would be required to perform an additional qualification exercise if they have to implement Appendix VIII examinations on the subject welds during the Cycle 12 refueling outages. It is estimated that the total cost to our inspection vendor could exceed \$100,000. If these qualifications were performed at the same time as the dissimilar metal weld qualifications, the additional costs would be minimal.

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These combined demonstrations would be performed according to the requirements of Supplement 12 to Appendix VIII. Modifications of Supplement 12 are currently in progress within the ASME Code to address piping examination from the ID surface. The required implementation date for Supplement 12 is November 22, 2002.

PDI has been administering Supplement 3 exams since 1994. These demonstrations have not included examinations from the pipe ID surface. Supplement 12 examinations are expected to begin by the required implementation date of November 22, 2002. This implementation date gives the industry adequate time to prepare samples, procedures, protocols, and demonstrations prior to outages scheduled on or after this date.

Attempting to implement the requirements during the Cycle 12 refueling outages for examining the subject welds from the inside surface would be a hardship. Relief is therefore requested in accordance with 10 CFR 50.55a(a)(3)(ii). Compliance with the specified requirements of doing the Appendix VIII, Supplement 3 UT examinations from the pipe OD would result in hardship or unusual difficulty without a compensating increase in the level of safety.

Recently, the NRC granted similar relief to Salem Generating Station, Unit 1. (Reference 2).

ALTERNATIVE EXAMINATIONS:

Perform RPV ultrasonic examination of the RPV nozzle to extension piece weld and the extension piece to pipe or elbow welds from the inside surface in accordance with the 1989 Edition, no Addenda of the ASME Boiler and Pressure Vessel Code, Section XI, per the previous commitment in the 2nd Interval Inservice Inspection Program (Reference 1).

This alternative examination is to be used during the San Onofre Unit 2 second 10-year interval, reactor pressure vessel examinations. These reactor vessel examinations are scheduled to occur in May of 2002. After November 22, 2002, SCE will use the PDI procedures for ID examinations for these welds.

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REFERENCES

- 1) Letter from W. C. Marsh (SCE) to the Document Control Desk (NRC), dated October 4, 1993; Subject: Docket Nos. 50-361 and 50-362, ASME Code Update for the Second Ten Year Interval, Inservice Inspection Programs, San Onofre Nuclear Generating Station, Units 2 and 3
- 2) Letter from J. Clifford (NRC) to H. W. Keiser (PSEG Nuclear) dated April 26, 2001; Subject: Salem Nuclear Generating Station, Unit No. 1 - Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval, Relief Request RR-B12 (TAC No. MB1236)