



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 46 TO PROVISIONAL OPERATING LICENSE NO. DPR-13

SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE UNIT NO. 1

DOCKET NO. 50-206

INTRODUCTION

As required by 10 CFR 50.55a(g), Southern California Edison Company (the licensee) has updated the Inservice Inspection and Testing Program for the San Onofre Unit 1 facility to the requirements of the 1974 Edition through Summer 1975 Addenda of Section XI ASME Boiler and Pressure Vessel Code (B&PVC). Based on information submitted by letters to the Commission from the licensee, dated September 28, 1977, May 26, 1978 and September 4, 1979, and meetings held on June 26 and 27, 1978, the program has been revised for compliance with the regulations. By application dated June 24, 1977, the licensee submitted proposed Technical Specifications for the inservice inspection and testing requirements for ASME Code Class 1, 2 and 3 components. This Safety Evaluation only encompasses the inservice inspection portion of the proposed technical specification change. We will issue a separate evaluation to complete our action for the pump and valve testing portion of the application.

Evaluation of those requirements which the licensee has determined to be impractical for implementation at the facility and for which the licensee has requested relief are discussed below:

I. INSERVICE INSPECTION

(Paragraph I.A.1 has been deleted by revisions to this Safety Evaluation issued by NRC letter dated April 30, 1980. See page 11, paragraph I.D for the revised evaluation).

Revised: April 30, 1980

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2. Request to delay examination of the reactor vessel integrity welded support lugs to the end of the inspection interval. (Item B1.12, Examination Category B-H)

Code Requirement

At least 25% of the required volumetric examination shall have been completed by the expiration of one-third of the inspection interval (with credit for no more than 33-1/3% if additional examinations are completed) and at least 50% shall have been completed by the expiration of two-thirds of the inspection interval (with credit for no more than 66-2/3%). The remaining required examinations shall be completed by the end of the inspection interval.

Evaluation

The design of the closure head and control rod drive penetration locations prevent volumetric examination of the dollar plate weld. As an alternate and continuing inspection of the weld, the licensee has proposed to visually inspect this weld during pressure tests performed during refueling intervals. Other welds on the closure head are examined to code requirements and are subject to additional examinations if unacceptable indications are revealed. The staff concludes that visual inspection of the dollar plate weld during pressure test at each refueling outage and acceptable results from volumetric examination of other closure head welds will provide an acceptable level of safety and assurance of the closure head structural integrity. Relief from the volumetric examination requirement may be granted.

- 5. Relief is requested from surface examination of the lower 270 degrees of the following Class 1, Category B-F welds.

Weld Designation

<u>Nozzle to Safe End Table B-1.6</u>	<u>Safe End to Pipe Table B-4.1</u>	<u>Loop</u>
A-1	A-2	A
A-18	A-17	
B-1	B-2	B
B-18	B-17	
C-1	C-2	C
C-18	C-17	

Code Requirement

Volumetric and surface examinations shall be made of the circumference of 100% of the nozzle-to-safe end welds.

Licensee Basis for Relief Request

Only the top 90° (approximately) segment of each reactor vessel-to-safe end weld and safe-end-to-piping welds are accessible for surface examination. The remaining portion of each weld is not accessible due to physical interference with the reactor cavity shield tanks and the lack of access space to the lower portion of the nozzle (three inch clearance). Drawings showing the physical location and limited access to these welds have been provided⁽¹⁾. These welds are examined volumetrically 100% in accordance with the Code.

⁽¹⁾ May 26, 1978 Letter from K. P. Baskin to K. R. Goller

Code Requirement

Surface examinations performed during each inspection interval shall cover all of the area of 25% of the pipe branch connection joints.

Licensee Basis for Relief Request

A concrete sleeve prevents volumetric or surface examination of these welds. The plant design precludes any examination except visual conducted during hydrotests. Welds on either side of this weld are examined per the Code. These welds are not part of the 25% area needed to satisfy the Code.

Evaluation

Inaccessibility of these welds prevents examination as required by the Code. Examination of the welds on each side of the inaccessible welds and visual examination of the areas around these welds will serve as an acceptable alternative for determining their structural integrity. The staff concludes that relief from the surface examination requirement may be granted.

9. Request relief from volumetric examination of reactor coolant pump casing welds, designated as A-1, 2 and 3, and B-1, 2, and 3, and C-1, 2, and 3 in Table B-5.6, and reactor coolant pump supports, designated as A-1, 2, and 3, B-1, 2, and 3, and C-1, 2, and 3 in Table B-5. 4. (Item B5.6, Examination Category B-L-1 and Item B5.4, Examination Category B-K-1)

Code Requirement

The volumetric examinations performed during each inspection interval shall cover 25% of the integrally welded supports and 100% of the pressure retaining welds in at least one pump in each group of pumps performing similar functions.

Licensee Basis for Relief Request

The pumps are cast stainless steel components. Therefore, meaningful ultrasonic or surface examination are not possible. The metal is approximately seven inches or greater in thickness. Therefore, it is not possible to examine by x-ray since a portable unit of sufficient source strength is not currently available.

Since ultrasonic techniques are not possible, and radiographic techniques are not currently available, relief is requested based on surface examinations of the support welds and visual examinations of the casing welds in lieu of the volumetric examination required by the Code.

Licensee Basis for Relief Request

Evaluation of indications at 20% of the reference level increases the number of indications which have to be evaluated by a very significant amount. To evaluate and record the numerous indications would require examination personnel to stay longer periods of time in radiation areas. The Summer 1978 Addendum to ASME Section XI currently requires recording indications at 50% of DAC. Thus, the proposed alternative is consistent with current industry practice.

Evaluation

Recording and evaluating indications at 20% DAC is impractical for the following reasons:

1. The welded joints in nuclear piping frequently contain Code allowable wall thickness differences (12% of nominal thickness) as well as some weld drop-through, counterbore taper, crown height, etc. These conditions generated an extremely large number of geometric reflectors which produce UT indications greater than 20% DAC.
2. Weld metal in stainless steel piping contains reflectors due to the metallurgical structure which produce a large number of UT indications.
3. All examination personnel experience radiation exposure during inservice examinations. The Section V requirement to record and evaluate UT indications at the 20% DAC places an unnecessary burden on the limited number of experienced and qualified examiners available to the owner.

The staff agrees that the licensee's alternate examination procedure is adequate to ensure detection of cracks warranting evaluation. The staff, therefore, grants relief from the 20% evaluation criteria outlined in the Code.

D.*** Repair of Class 1, 2 and 3 Components

Relief is requested from the repair requirements of Articles IWA-4000, IWB-4000, IWC-4000, and IWD-4000 of the 1974 Edition and Addenda through Summer 1975. Repairs will be conducted in accordance with Articles IWA-4000, IWB-4000, IWC-4000, and IWD-4000 of the 1977 Edition and Addenda through Summer 1978 of Section XI.

Code Requirements

The repair requirements are contained in Articles IWA-4000, IWB-4000, IWC-4000 and IWD-4000. In some cases the rules of ASME B&PVC Section III are invoked. In the event repairs not addressed in these articles are required, the repairs may be made in accordance with the requirement of the original construction code. In the 1974 Edition and Addenda through Summer 1975, Articles IWC-4000 and IWD-4000 were in course of preparation and the repair rules of IWB-4000 were applied.

***February 14, 1980 Letter from K. P. Baskin to D. L. Ziemann

Licensee Basis for Relief Request

The repair rules of the 1974 Edition and Addenda through Summer 1975 are ambiguous and lack definition. These rules do not sufficiently define such items as: pressure testing requirements following repairs by welding, the role of the Authorized Inspector in the repair program, and welder qualifications. These rules do not take into consideration the cause of failure and the suitability of the welding repair procedures. These rules were not developed for plants, like San Onofre Unit 1, which were designed per codes other than Section III of the ASME B&PVC.

In contrast, the repair rules of the 1977 Edition and Addenda through Summer 1978 define in detail: pressure testing requirements, notification of an Authorized Inspection Agency, and welder qualification records. These rules have provisions for incorporating original design requirements and construction codes. The use of Section III of the ASME B&PVC is explained. Finally, the rules require a complete repair program including evaluation of failure causes and the suitability of repair procedures. This recent code presents clear well-defined repair requirements which meet the intent of the 1974 Edition and Addenda through Summer 1975.

A letter from the NRC dated September 26, 1979 granted this relief for Class 1 components with the exception that piping, pump, and valve repairs that do not penetrate through the pressure boundary must be hydrostatically tested. On November 1, 1979, 10CFR50.55a was revised to allow the use of the 1977 Edition and Addenda through Summer 1978 repair rules without this exception. In addition, the NRC Safety Evaluation of our relief request indicates that the repair rules of the 1977 Edition and Addenda through Summer 1978 are significantly improved when compared to those of the 1974 Edition and Addenda through Summer 1975. Therefore, imposition of the exception discussed above is not warranted.

Evaluation

The repair rules of the 1977 Edition and Addenda through Summer 1978 of Section XI are significantly improved when compared to those of the 1974 Edition through Summer 1975 Addenda. Use of the 1977 Edition through Summer 1978 Addenda for repairs of the Class 1, 2, and 3 pressure retaining boundary of components would therefore constitute an improvement in the licensee's inspection program provided piping, pump, and valve repairs that do not penetrate through the pressure boundary are not exempted from the hydrostatic pressure test as allowed by IWA-4400(b)(3).

Paragraph IWA-4210 of the 1974 Edition does not have provisions for minor repairs and requires a pressure test after all repairs by welding on the pressure retaining boundary except cladding. The corresponding Paragraph IWA-4400 "Pressure Test", contained in the Summer 1978 Addenda provides an acceptable level of safety based on the recent reference in the Regulation. However, we will require an Augmented Inservice Inspection Program related to the application of IWA-4400(b)(3) which permits an exemption from the system hydrostatic pressure tests for piping, pump, and valve repairs that do not penetrate through the pressure boundary. In the event that the

repaired cavity exceeds 10% of the minimum design wall thickness and a system hydrostatic pressure test is not performed, we will require that a specific relief request be submitted by the licensee to demonstrate that the test is impractical.

The staff concludes that relief may be granted as requested with the exception that the Augmented Inservice Inspection Program related to IWA-4400(b)(3) is incorporated.

II. TECHNICAL SPECIFICATIONS

The changes to the Technical Specifications for the inservice inspection portion requested in the licensee's June 24, 1977, Proposed Change No. 60, conform to the sample Technical Specifications enclosed with our letter to the licensee dated April 22, 1976. The revised Technical Specifications require all inservice inspections to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR Part 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to Section 50.55a(g)(6)(i), defined in Part I of this Safety Evaluation. We, therefore, find the changes to the Technical Specifications to be acceptable.

III. SUMMARY

The licensee has submitted information to support his determination that certain requirements of the 1974 Edition through Summer 1975 Addenda of the ASME Section XI Code are impractical to implement at the San Onofre Unit 1 facility. We have evaluated the licensee's bases for his determinations and find that relief from the specific Code requirements may be granted as requested with the exception for relief request I.A.1. Based on our evaluation, we conclude that granting relief from certain requirements is authorized by law, will not endanger life or property or the common defense and security and is otherwise in the public interest considering the burden on the licensee that could result if the requirements were imposed. We conclude that the updated Inservice Inspection Program (excluding pumps and valves) meets the requirements of 10 CFR 50.55a(g) and that the proposed changes to the Technical Specifications are acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that this amendment and granting of the relief do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment and the relief involve actions which are insignificant from the standpoint of environmental impact, and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these actions.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 26, 1979

Revised: April 30, 1980