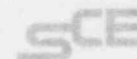


Southern California Edison Company



P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

J. G. HAYNES
MANAGER OF NUCLEAR OPERATIONS

June 29, 1983

TELEPHONE
(213) 572-1742

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. John B. Martin, Regional Administrator

Dear Sir:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Enclosed, as requested in IE Bulletin No. 82-02: Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants, are responses to Action Item Nos. 1, 2 and 4 for San Onofre Units 2 and 3. The responses to Action Item Nos. 3 and 5 were previously provided by letter dated August 10, 1982. Action Item No. 4 is to provide a written report signed under oath or affirmation that Action Item No. 1 has been completed and identification of the specific connections examined and the results of the examinations performed as required by Action Item No. 2.

The enclosed inspection results are being submitted within 60 days following completion of the outage during which part of Action Item No. 2 was performed as specified in IE Bulletin 82-02 Action Item No. 4. However, as stated in the October 1, 1982 letter response to IE Bulletin 82-02 for San Onofre Unit 1, we are also required to submit reports of information identified through our Inservice Inspection Program within 90 days following the completion of outages during which an inservice inspection was performed. We anticipate separate reports would be required 60 and 90 days following the completion of certain outages. This situation could result in unnecessary duplicative efforts and inconsistent report preparation. To assure a consistent effort in preparing these reports, we intend to submit all future reports required by Action Item No. 4 within 90 days following the completion of outages during which the remaining parts of Action Item No. 2 will be

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June 29, 1983

performed. Reports of the first inspection of threaded fasteners for each closure opened will be provided as stated above, and documentation of subsequent inspections of threaded fasteners for the same closure will be available at the San Onofre site for NRC review and would be included in the inservice inspection reports when appropriate.

In our letter of August 10, 1982 we committed to complete Action Item No. 2, to remove, clean and inspect threaded fasteners within the scope of IE Bulletin 82-02 per ASME Code Section XI (1974 or later) IWA-2210 and 2220, no later than the completion of the next refueling outage. However, in a telephone discussion on June 27, 1983 between our Mr. T. D. Mercurio and Mr. W. J. Collins on the NRC Inspection and Enforcement staff, Mr. Collins clarified that it is not required to perform the Action Item No. 2 inspections for the complete scope defined in IE Bulletin 82-02 prior to completion of the next refueling outage. Accordingly, SCE will perform the inspections required by IE Bulletin 82-02 only when the closures are opened for component inspection or maintenance.

If you have any questions or require additional information, please let me know.

Subscribed on this 29 day of June, 1983.

Very truly yours

By:

J. G. Haynes
J. G. Haynes
Manager of Nuclear Engineering,
Safety, and Licensing

Subscribed and sworn to before me this
29th day of June 1983.

Agnes Crabtree
Notary Public in and for the County of
Los Angeles, State of California



Enclosure

cc: Director, Office of Inspection
and Enforcement, NRC

ACTION ITEM NO. 4

REPORT OF INFORMATION REQUESTED IN
ACTION ITEM NOS. 1 AND 2

IE BULLETIN NO. 82-02

DEGRADATION OF THREADED FASTENERS
IN THE REACTOR COOLANT PRESSURE BOUNDARY
OF PWR PLANTS

San Onofre Nuclear Generating Station
Units 2 & 3

RESPONSE TO ACTION ITEM NOS. 1 AND 2
IE BULLETIN NO. 82-02

DEGRADATION OF THREADED FASTENERS IN THE
REACTOR COOLANT PRESSURE BOUNDARY (RCPB) OF PWR PLANTS

SCOPE

The scope of action items listed below is limited to the RCPB. Included are the threaded fasteners (studs or bolts) in (1) steam generator and pressurizer manway closures, (2) valve bonnets, and pump flange connections installed on lines having a nominal diameter of 6 inches or greater and (3) control rod drive (CRD) flange and pressurizer heater connections that do not have seal welds to provide leak-tight integrity. That is, CRDs having an omega seal weld design are excluded from this bulletin action. The reactor vessel head closure studs are also excluded for those PWR licensees committed to the provisions of Regulatory Guide 1.65, "Materials and Inspection for Reactor Vessel Closure Studs."

ACTION ITEM NO. 1

Where procedures do not exist, develop and implement maintenance procedures for threaded fastener practices. These procedures should include, but not be limited to the following: (1) maintenance crew training of proper bolting/stud practices, tools application, specifications and requirements, (2) detensioning and retensioning practices (torque iteration), specified tolerances, and other controls for disassembly and reassembly of component closure/seal connections, (3) gasket installation and controls, and (4) retensioning methods and other measures to eliminate reactor coolant leakage during operations.

Quality assurance measures should also be established for proper selection, procurement, and application of fastener lubricants and injection sealant compounds to minimize fastener susceptibility to SCC environments.

Response

Action Item No. 1 has been completed with the issuance or revision of the following station procedures:

1. Maintenance Procedure S023-I-6.46, Valve Inspection, Lubrication and Packing
2. Maintenance Procedure S023-I-6.113, Removal and Installation of Steam Generator (Primary) and Pressurizer Manway Covers
3. Maintenance Procedure S023-I-5.11, Reactor Coolant Pump Maintenance
4. Maintenance Procedure S0123-I-7.19, Monitoring of Threaded Fasteners (Bolts/Studs) in the Reactor Coolant Pressure Boundary

5. Engineering Procedure S023-V-3.1, Inservice Inspection of Class I Components
6. Engineering Procedure S023-V-3.2, Inservice Inspection of Class II Components

Corresponding Quality Assurance measures have been established to confirm proper fastener lubricant and injection sealant selection, procurement and application at all levels.

ACTION ITEM NO. 2

Threaded fasteners of closure connections, identified in the scope of this bulletin, when opened for component inspection or maintenance shall be removed (fasteners "seized" or designed with interference fit may be inspected in place), cleaned, and inspected per IWA-2210 and IWA-2220 of ASME Code Section XI (1974 edition or later) before being reused.

This report is to include:

- a. Identification of the specific connections examined.
- b. The results of the examinations performed on the threaded fasteners. If no degradation was observed for a particular connection, a statement to that effect, identification of the connection and, whether the fasteners were examined in place or removed is all that is required. If degradation was observed, the report should provide detailed information.

Response

This report covers all inspections of threaded fasteners performed during the outage which ended May 1, 1983.

An inspection of all twenty (20) hot leg primary manway cover studs removed from San Onofre Unit 2 Steam Generator S21301ME089 has been conducted. All twenty (20) hot leg primary manway cover studs were visually inspected per the requirements of Paragraph IWA-2210 of the 1977 Edition of the ASME Boiler and Pressure Vessel Code, Section XI. Eight (8) of the twenty (20) studs were rejected due to surface degradation, consistent with that resulting from boric acid wastage (see attached Inspection Report 2M-073-083 for detailed results.) The remaining twelve (12) studs were then subjected to magnetic particle examination (surface examination per IWA-2220). No indications were found, and these twelve (12) studs were returned to the warehouse for reuse at a later date. All twenty (20) studs securing the manway cover were replaced with new studs. The manway closure was opened because of leakage, and only the studs in the leakage path had any erosion. The leakage occurred because the manway cover had not been evenly installed which caused uneven gasket compression. A new gasket has been installed, the manway cover correctly installed and no leakage has occurred at full system temperature and pressure.

In addition to the above, supplemental inspections at San Onofre Unit 2 were performed on all sixteen (16) cover to case retaining studs in Reactor Coolant Pump (RCP) P003 and on a representative sample of the studs in RCPs P001, P002 and P004. This supplemental inspection was performed in situ using the Combustion Engineering Stud Inspection Device. All sixteen (16) studs on RCP

P003 were inspected using radially-directed longitudinal wave techniques to detect wastage, and the odd-numbered studs were subjected to an additional examination utilizing shear-wave techniques to detect thread damage. Four (4) studs each on RCPs P001, P002 and P004 were also examined with both longitudinal and shear-wave techniques. No significant indications were detected in any of the RCP stud examinations. The studs were inspected following the detection of leakage through the case gaskets, and an intergasket leakage collection system has now been installed as a temporary fix pending a long term gasket design solution which is in the process of development.

TDMercurio:8475

INSPECTION REPORT
NO. 2M-073-83

VISUAL INSPECTION OF
STEAM GENERATOR MANWAY STUDS

IE BULLETIN 82-02: ACTION ITEM NO. 2

SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 2

INSPECTION REPORT

SCE

Southern California Edison Company

Project SONGS 2

No. 2M-073-83

Inspection Date 3-30-83

Page 1 of 5

Prime Supplier SCE

W.O. 23670
~~XXXXXXXXXX~~ J.A.D. 4-5-83

Location Unit 2

Specification No. ASME SECT. II, IWA 2210
IWA 2221

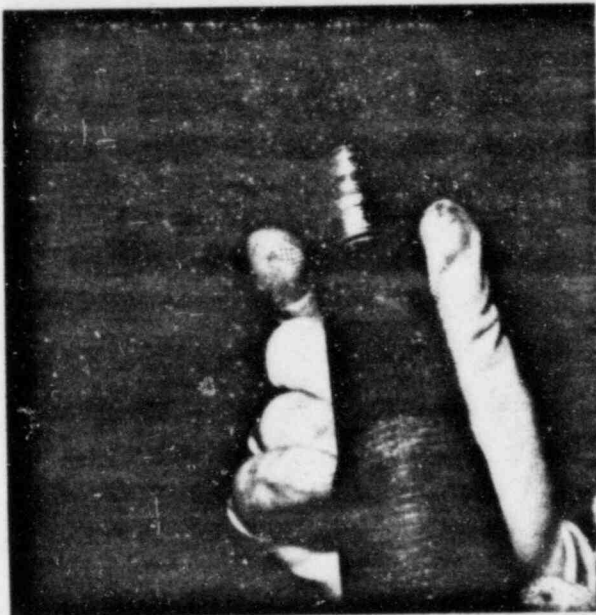
Item Description Stem/Gen Manway Studs

Inspection Point No. 6

Contacts Blake Carpenter

Inspection Plan No. N/A

REPORT SUMMARY: Visual Inspection. Visual inspection was performed as a result of I.E. Bulletin No. 82-02.



Stud 2-22 Hold Tag 007 NCR 2-205

The 1st five (5) threads from the shank $1\frac{1}{2}$ " wide area has thread reduction of $\frac{1}{8}$ " to $\frac{1}{2}$ " of the thread height. The shank is pitted $2\frac{1}{2}$ " by $1\frac{1}{2}$ " area. Pits are approximately .010 to .050 deep.

D.E. MANN
R.M. ROSENBLUM
M.A. NORTON
J.J. NAMBOLD

O.C. STANLEY/HQA FILE
CONE

DISTRIBUTION:

Inspected By B. HAMMER, J. STANLEY Date 3-30-83

SCE 37-13 NEW 9/78 H.E. MORGAN

Approved By [Signature] Date 4-5-83

INSPECTION REPORT, CONTINUATION

Page 2 of 5

W.O.

~~XX~~ No. 23670No. 2M-673Item Description Stem/Gen Manway Studs

REPORT SUMMARY (CONTINUED):



2-23

Stud 2-23, Hold tag 001, NCR-2-205
The 1st 3 threads from the shank
have an area $\frac{1}{4}$ " wide with a thread
reduction of $\frac{1}{2}$ the thread height.
The shank has pits of approximately
.015 to .020 depth.



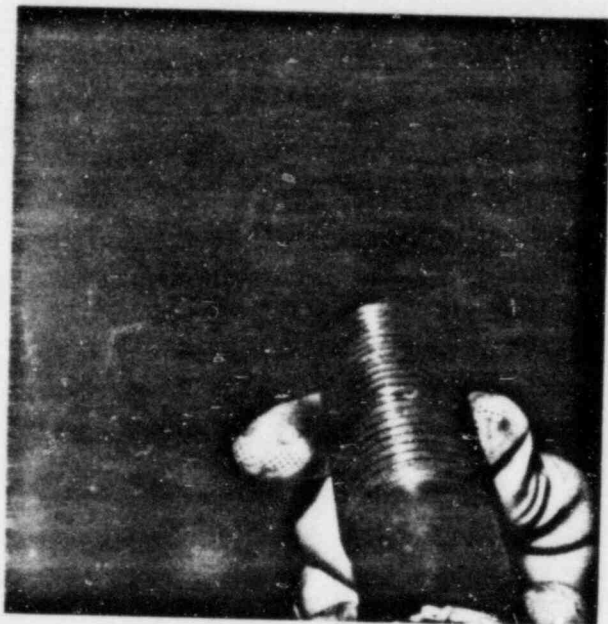
2-24

Stud 2-24 Hold tag 006, NCR-2-205
The 1st five (5) threads from the
shank have a reduction of $\frac{1}{4}$ to
 $\frac{1}{2}$ the thread height. Pitting on
the shank is approximately .010
to .040 depth.

pet

Item Description Stem/Gen Manway StudsW. Q. No. 23670
~~XXX~~No. 201-673-83

REPORT SUMMARY (CONTINUED):



2-30

Stud 2-30 Hold tag 008, NCR-2-205
The 1st (3) three threads from the shank have pitting to approximately .002 on shank and threads. The ninth (9th) thread from the shank has physical damage of 1/2 the thread height.



2-36

Stud 2-36 Hold tag 004 NCR-2-205
The 1st (5) five threads in an area approximately 1" wide have a reduction of 1/2 the thread height. The shank area has pitting of approximately .020 to .030 depth.

Item Description Stem/Gen Manway StudsW.O. 23670
R.G. No. XXNo. 2007A-52

REPORT SUMMARY (CONTINUED):



2-37

Stud 2-37 Hold tag 003, NCR-2-205
The 1st (6) six threads in a 2" wide
area have major thread and body
reduction to the depth of .050 to
.100. The shank has pitting to the
depth of .020.



2-38

Stud 2-38 Hold tag 005 NCR-2-205
The 1st (4) four threads from the
shank reduced by 1/4 the thread
height. The shank has pitting over
005.

INSPECTION REPORT, CONTINUATION

Page 5 of 5Item Description Stem/Gen Manway StudsW.O. 23670

XX No.

No. 24-018-84

REPORT SUMMARY (CONTINUED):



Stud 2-40 Hold tag 002, NCR-2-205

The 1st (4) four threads in an area $1\frac{1}{2}$ " wide has pitting from .003 to .015.