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DUKE POWER

May 30, 1989

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Second Ten Year Interval
Request for Relief No. 89-04

Gentlemen:

Pursuant to 10 CFR 50.55a, please find the attached request for relief number 89-04 from the requirements of Section XI of the ASME Boiler and Pressure Vessel Code (with Addenda through Winter 1980). This request is being submitted due to the impracticality of performing a full volumetric examination of turbine stop valve upper head to valve body studs. The attached request concerns the inservice inspection at Oconee Nuclear Station being performed during the second ten year interval.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

PJN/2/td

Attachment

cc: Mr. S. D. Ebneter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323

Mr. L. A. Weins
Office of Nuclear Reactor Reg.
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. P. H. Skinner
NRC Resident Inspector
Oconee Nuclear Station

Mr. Heyward Shealy
Bureau of Radiological Health
S.C. Dept. of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

A047
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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

Second Ten Year Interval
Request for Relief No. 89-04

I. Component for which exemption is requested:

a. Name and Identification Number:

Main Steam Turbine Stop Valve Upper Head to Valve Body Studs. Valve Manual OM-200-195 (See Attached Figures).

b. Function: Pressure retaining bolting of upper head to valve body.

c. ASME Section XI Code Class: Class 2

d. Construction Code and Class: ANSI (USAS) B31.1, Class F

e. Valve Category: Category A

II. Reference Code Requirement that has been determined to be impractical:

ASME Boiler and Pressure Vessel Code Section XI, 1980 Edition (with Addenda through Winter 1980) Table IWC-2500-1; Category C-D; Item C4.40 Volumetric Examination requirements of figure number IWC-2500-6.

III. Basis for Requesting Relief:

ASME Section XI, IWC2500-6 requires that the full volume of the thread portion of the stud be examined. This request for relief is on the premise that even though the code requires a volumetric examination of the entire length of the stud, the actual areas of concern would be the thread run-out points, where the threads meet the body of the stud; the first three to four threads that engage the nut.

The Design Engineering Department of Duke Power Company performed an evaluation to support this request. It was concluded that the last 2.9" of the stud that is engaged in the valve body would not have any significant load that would lead to the stud's failure. Further, the stud manufacturer, General Electric (GE), in their document "Valve Studs-Tightening, Inspection & Replacement Recommendations (TIL-891)", states;" The results obtained to date indicate that crack indications will appear at the first or second thread, 0-1/4 inch below the valve joint surface..."

IV. Alternate Examination:

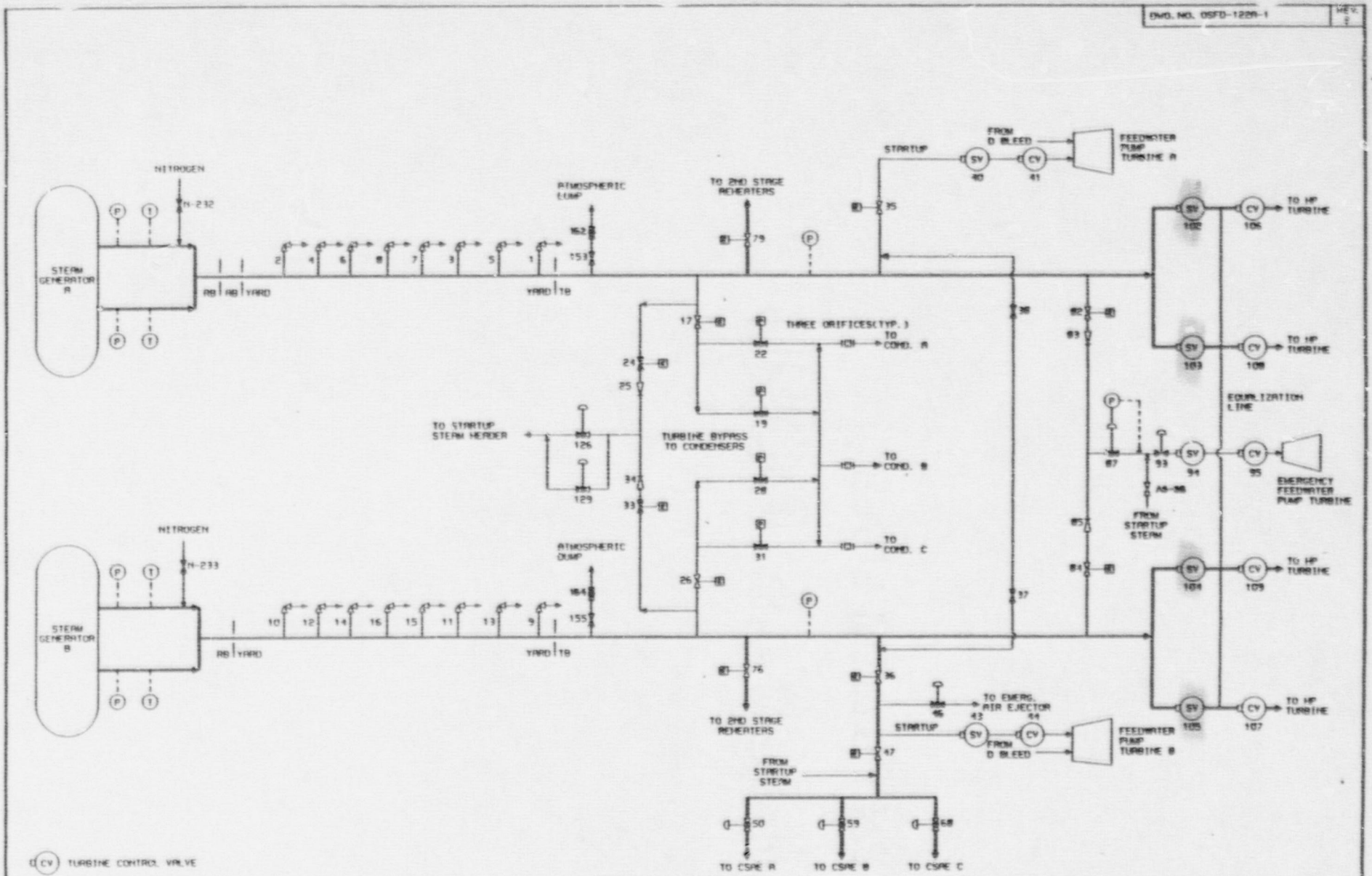
Article 5 of ASME Section V, Paragraph T-541.5 specifies the ultrasonic examination be performed from the end of the bolt. Calibration shall be established from a 3/8" diameter, 3"long, flat bottom hole drilled in the end of the calibration standard(s) with dimensions as identified in Table 541.5.2 Configuration of the Main Steam Upper Head Studs on the Turbine Stop Valve prevents this technique from being properly utilized.

The Main Steam Turbine Stop Valve Upper Head Stud is configured with a .620" diameter heater hole that runs 11.13" of the length of the stud. An in-place examination using an ultrasonic angle beam transducer can be performed from the heater hole.

ASME Section XI 1983 winter addenda specifies that a procedure qualification be performed in accordance with Paragraph VI-2430. The sensitivity of the examination shall be established using a qualification specimen with notches of dimensions that are specified in Table VI-2430-1. The ultrasonic examination specified in Article 5 of ASME Section V, Paragraph T-541.5 can not be performed using that calibration block design. However, an angle beam examination has been established using the qualification specimen design identified in the ASME Section XI 1983 winter addenda, Paragraph VI-2430. This technique is an in-place examination that employs a 45 degree angle beam transducer through the heater hole. It is capable of detecting cracks from the top of the stud to the last two threads engaged in the valve body. This is approximately 1.5" beyond the critical area identified in the Design Engineering evaluation.

V. Implementation Schedule:

This examination is scheduled to be performed during the current (10th) refueling outage for Oconee Unit 2 during the period from May 19, 1989 to July 2, 1989. For Oconee Units 1 and 3 these examinations are scheduled to be performed during upcoming outages 12 and 11 respectively.



FLOW DIAGRAM OF MAIN STEAM AND AUXILIARY STEAM SYSTEM

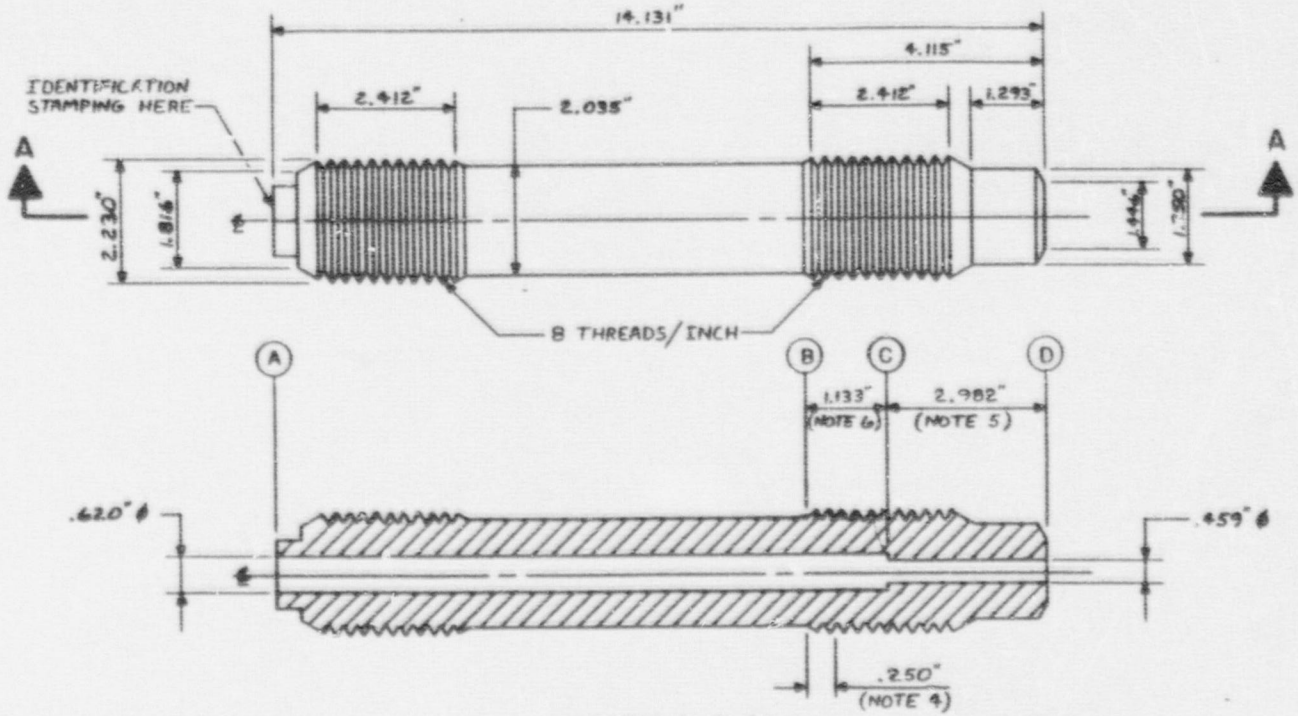
OCONEE NUCLEAR STATION

Figure 10.3-1

1987 Update

L

ATTACHMENT # 2
CALC. OSC-3369



SECTION A-A

NOTES:

(1) STUDS WILL BE MARKED WITH A G.E. TURBINE NUMBER AS FOLLOWS: 170392 170393 170449
(2) DIMENSIONS ON THIS DWG. ARE AS MEASURED FROM A SPARE UNIT #1 STUD.
(3) THESE STUDS ARE A FERRITIC MATERIAL TO G.E. MATERIAL SPEC. 85F58. STUDS WILL BE STAMPED WITH "L" FOR IDENTIFICATION OF THIS MATERIAL.
(4) PER TIL-891, ANY INDICATION FOUND TO DATE OCCURRED HERE IN THE FIRST 0-14.
(5) BASED ON LOAD DISTRIBUTION IN THREADED FASTENERS, THE STRESSES IN THIS AREA WOULD BE LOW ENOUGH THAT ANY INDICATION WHICH MIGHT EXIST SHOULD NOT PROPAGATE. (SEE OCONEE CALCULATION OSC-3369).
(6) THIS IS THE DISTANCE FROM THE FIRST THREAD TO THE SHOULDER ON THE I.D. AND ALSO EQUALS APPROX. ONE HALF THE THREAD DIAMETER.

Q A CONDITION 1
NUCLEAR SAFETY RELATED

IDENTIFICATION LEGEND

TYPE OF BOLT — BOLT LENGTH (14.125") — MATERIAL SPEC. CODE

606 - 217 - 1412 - L - 170392

MATERIAL PROPERTIES CODE — G.E. TURBINE NUMBER

REFERENCES:

1. G.E. TECHNICAL INFORMATION LETTER (TIL-891) TRANSMITTED TO DUKE POWER BY LETTER OF 12-20-79.
2. G.E. TURBINE GENERATOR MANUAL OM-200-195.

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE
ORIG.	RELEASED FOR USE WITH CALC. OSC-3369						

DUKE POWER COMPANY
OCONEE UNITS 1, 2 & 3

MAIN STEAM TURBINE STOP VALVE UPPER HEAD STUD

SKETCH OSC-3369 REV. 0