UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-269/82-28, 50-270/82-28, and 50-287/82-28

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Facility Name: Oconee

Docket Nos. 50-269, 50-270, and 50-287

License Nos. DPR-38, DPR-47, and DPR-55

Inspection at Oconee site near Seneca, South Carolina

Inspector: _____ Aug 8, 1982
W. P. Kleinsorge Date Signed

Approved by: _____ 8/11/82
N. Economos, Acting Section Chief Date Signed
Engineering Inspection Branch
Division of Engineering and Technical Programs

SUMMARY

Inspection on July 6-7, 1982

Areas Inspected

This routine, announced inspection involved 15 inspector-hours on site in the areas of extraction steam line break (Units 1, 2, and 3); modification of auxiliary feedwater system (Unit 3); and reactor coolant pump stud wastage (Units 2 and 3).

Results

No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *J. E. Smith, Station Manager

   Other licensee employees contacted included construction craftsmen, engineers, technicians, and office personnel.

   NRC Resident Inspector

   *W. Orders

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on July 7, 1982, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

   Not inspected.

4. Unresolved Items

   Unresolved items were not identified during this inspection.

5. Extraction Steam Line Break (Units 1, 2, and 3)

   On June 28, 1982, the first 24-inch elbow down stream of the 42-inch high pressure discharge pipe turbine end left side C-extraction line ruptured (see figures 1 and 2). The inspector observed the failed component section that was located in the turbine building and noted that the work effort to replace the failed section had been completed.

   Discussions with the licensee representative disclosed the following history of high pressure turbine extraction line failures:

   October 1976 Unit 3 - The first pipe section between the 20-inch nozzle on the 42-inch high pressure discharge pipe on the C-extraction turbine end left side, failed by erosion at the six o'clock position.

   March 1977 Unit 3 - The first pipe section between 20-inch nozzle on the 42-inch high pressure discharge pipe and the first elbow on the C-extraction generator end right side, failed by erosion at the six o'clock position.

August 1978 Unit 1 - The weld joining the turbine nozzle to the first pipe section on the turbine end, B-extraction, failed by erosion. The erosion was attributed to a misaligned backing ring, which caused eddies in the steam flow.

Late 1979 Unit 3 - The first elbow downstream of the 20-inch nozzle on the 42-inch high pressure discharge pipe C-extraction turbine end developed a pinhole leak.

As a result of the 1976 failure, the licensee instituted an informal (undocumented) ultrasonic (UT) thickness examination program to monitor further deleterious erosion prior to failure.

Concerned over the third extraction line failure, the licensee formalized the UT thickness inspection program, with procedure MP/O/B/3004/06, "Procedure for Periodic Inspection of Extraction Piping Wall Thickness". This procedure requires spot UT wall thickness measurements 90° apart. The number of measurements was specified by the procedure and the exact position of the measurements was left to the examiner's discretion. The location of the measurements was not marked on the material examined, thus there was no correlation from one test to the next. As a result of the June 1982 Unit 2 C-extraction line failure, the licensee inspected fifteen extraction line fittings on Units 1 and 2, HP-turbines. The licensee intends to inspect the Unit 3 extraction lines by the end of July. This UT examination was made with the aid of a 4" X 4" grid, marked on the component, thus providing direct correlation from one test to the next. As a result of the above grid UT examination approach, on July 1, the licensee detected that an area on the same Unit 1 elbow was below minimum wall thickness. The minimum wall thickness required (as determined in accordance with ANSI B3.1.1.0-76) was 0.153", whereas actual measured wall thickness was 0.100 ± 0.030" as determined by hot UT. This thin area was repaired utilizing a welded doubler plate. The licensee intends to replace this elbow during the next outage of sufficient duration. The licensee is in the process of reevaluating the extraction piping inspection program. The licensee indicated that they would inspect the Unit 3 main steam system upstream of the main steam stop valve, by the end of July. The above matter is discussed also in IE-RII Report 269,270,287/82-26.

Within the area inspected, no violations or deviations were identified.

6. Modification of Auxiliary Feedwater System (Unit 3)

Distortion of the inside headers on the steam generator auxiliary feedwater system was discovered during an early 1982 outage at the Davis-Besse Unit 1 Nuclear Plant. Babcock and Wilcox (B&W) determined that this problem was generic for the once through steam generators (OTSG) with the internal headers in the auxiliary feedwater system. Oconee Units 1 and 2 have external headers in the auxiliary feedwater system and will not have to be modified. Oconee Unit 3, which has the internal header, is in the

process of being modified during the current outage. The licensee has completed the drilling of all six, 5-inch diameter holes required to accommodate the external riser pipes in both OTSGs. On OTSG "3B" all the dowel pins and dowel pin tabs have been removed from the feed ring and the feed ring has been jacked up in preparation for rotation to the appropriate position. The inspector inspected OTSG "3A" and observed some of the cutting operation for the removal of dowel pins and dowel pin tabs. The inspector reviewed the below listed B&W drawings:

1134941, Rev. 0
1134942, Rev. 0
1132226, Rev. 0
1134948, Rev. 2
1134883, Rev. 1

The licensee informed the inspector that the detailed welding procedure was in preparation and they expected to start welding OTSG "3B" feed ring on or about July 9, 1982.

Within the area examined, no violations or deviations were identified.

7. Reactor Coolant Pump Stud Wastage (Units 2 and 3)

Wastage of reactor coolant pump closure studs attributed to boric acid corrosion had been identified by the licensee on pumps manufactured by the Bingham-Willamette Company. The above pumps are installed in Units 2 and 3. The inspector reviewed Duke procedure MP/2&3/A/1310/22, "Closure Stud Inspection, Removal and Replacement on Bingham Reactor Coolant Pumps" dated 1-12-82, for approval and technical content. The inspector reviewed quality records associated with the above procedure and inspected certain studs in place on reactor coolant pump 3A1 prior to cleaning.

Within the areas examined, no violations or deviations were noted.

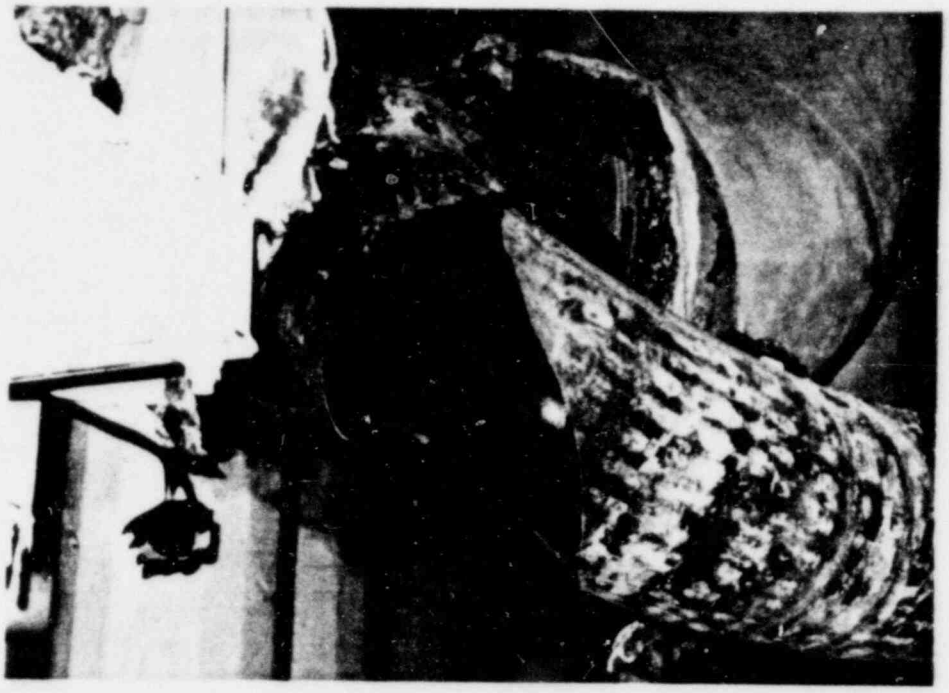

Figure-1
Photograph depicting general view of steam turbine heat extractor pipe elbow where failure occured. The point of failure appears to be near the 12 o'clock position. The torn pipe section is folded under the pipe.

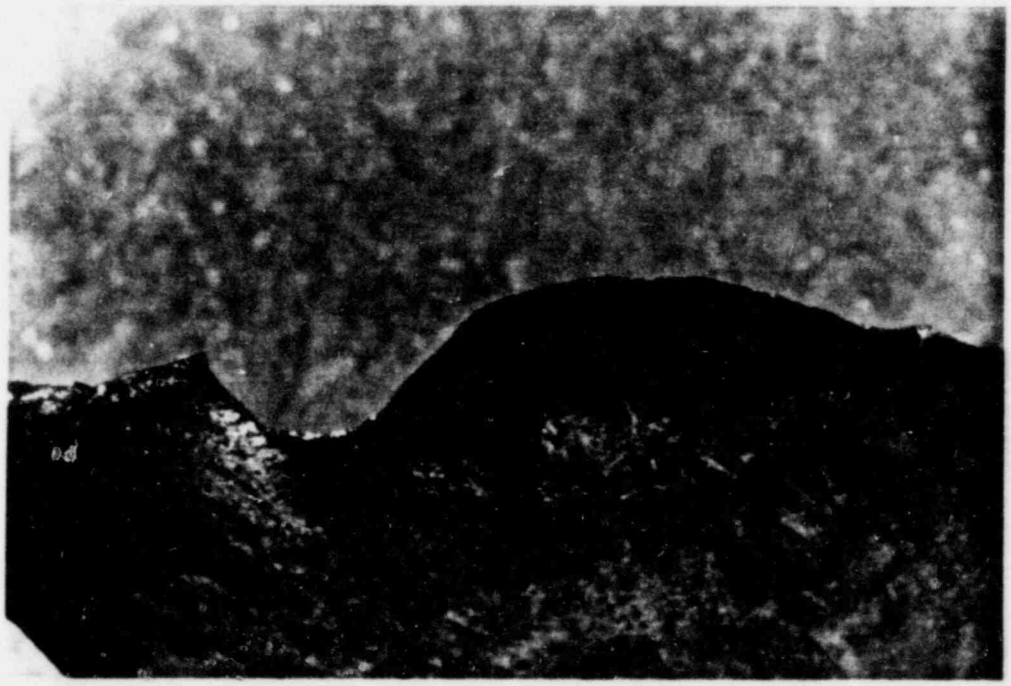

Figure-2
Photograph depicting closeups view (grooved areas) of pipe flap location where failure initiated.