

DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

November 19, 1971

P. O. Box 2178

Mr. John G. Davis, Director
U. S. Atomic Energy Commission
Divn of Compliance
Region II - Suite 818
230 Peachtree Street, Northwest
Atlanta, Ga 30303

Subject: CO:II:CEM
50-269/71-7

Dear Mr. Davis:

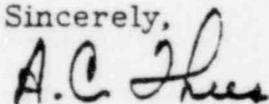
In answer to your letter of October 1, 1971, concerning items of apparent non-compliance with Criterion VIII of Appendix B to 10 CFR 50 - "Identification and Control of Materials, Parts, and Components" - Duke Power Co has carefully reviewed this whole matter.

We appreciate the extension of time for reply to enable us to provide a more complete answer.

Attached is a statement which has been prepared in an effort to fully outline the problem, our adjustments to our Quality Assurance Program, and the improvements which we have been able to make in the overall identification of materials.

We believe that these steps will adequately answer the concerns expressed in your letter, but if there is any further information, please advise.

Sincerely,



A. C. Thies

ACT/hr
Attachment

cc: Mr. W.S. Lee
Mr. W.H. Owen
Mr. E.D. Powell
Mr. C.E. Watkins



7912050 896

1. Statement of the Problem:

On October 1, 1971, Mr. John G. Davis of the AEC wrote Duke Power Company a letter indicating a non-compliance item of Criterion 8, Appendix B, 10CFR50, "Identification and Control of Materials, Parts and Components (June 27, 1970)."

There are some materials erected in Unit 1 piping systems that cannot be totally traced and identified to its unique Mill Test Report herein-after defined as "Untraceable" materials. These "Untraceable" materials resulted due to one or more of the following documentation discrepancies.

- a) Incorrect heat number recorded - does not agree with any MTR
- b) Heat numbers obliterated during construction
- c) Heat number on component o.k. but no MTR available (Duke trying to obtain these)
- d) Failure to record heat numbers

Overall, the materials involved represent less than 5% of the total traceable materials for Unit 1.

2. Duke's Response to the Problem:

Duke Power Company's QA program for piping materials began in late 1967 when Duke recognized the need for certain non-destructive testing and documentation of piping systems. Duke produced a Power Piping Quality Assurance Manual (PPQA Manual) which was formally issued in 1968, defining those classes of materials that required special certification and handling on a system basis. Duke also purchased piping for portions of engineered safety feature systems in late 1967 with documentation and non-destructive testing requirements prior to any official nuclear guidelines in the way of a code, standard or other regulation. In February, 1968, the ANSI B31.7 was published for trial use only and Duke worked this requirement into the PPQA Manual on the premise that this document would be a requirement and guideline for the purchase, erection and NDT of piping systems. The piping mentioned above did in fact meet all requirements of this publication. The PPQA Manual is sub-divided into three separate sections as follows and has been reviewed by the AEC on a previous visit to Duke's General Offices.

Section I: Indicates Duke Power Company's position and attitude toward Quality Assurance and defines in detail the various job assignments to all parties for the procurement of materials.

Section II: Defines the Duke Engineering Department's design criteria, piping system classifications and detail piping specifications including non-destructive test requirements, documentation, etc. and sets forth Vendor requirements for handling of piping materials.

Section III: Defines the Engineering Department requirements for field work in handling, erection and cleaning of nuclear materials. The Construction Department is responsible for detailed procedures in this area.

Duke's QA program includes QA Audits for initial qualification and followup surveillance of suppliers and vendors. As a result of Duke's QA program, Duke actually received some of the first Class 1 nuclear materials produced by several manufacturers in this Country. In addition,

the PPQA Manual requires that critical Class I and Class II nuclear material components receive 100% source inspection at the place of manufacture prior to shipment. This PPQA Manual has continually been under improvement and revision to meet all current standards and practices insofar as possible for the Oconee station.

During the documentation process for Oconee 1 after initial construction was essentially complete, it was found that recording of heat numbers for some piping components was impossible as discussed in Statement of the Problem above. At the time the AEC reviewed the documentation records of piping systems, the documentation process was not complete and a substantial number of components were identified as "Untraceable."

Since the problem has been identified and quantified, Duke Engineering and Construction have worked together to justify or replace materials as required. As Unit 1 system erection, hydro testing, flushing and preoperation check-out was essentially complete when Duke's Quality Assurance program noted traceability discrepancies, a high level of confidence had already been established in the design and construction of most systems for the service requirements intended. For these systems, a program to justify the actual "Untraceable" materials was put into action. For those systems on which less time, testing and overall Company confidence had been gained, a program of replacement for "Untraceable" materials went into effect.

Most systems affected are stainless steel; thus, the program of justifying erected materials is more attractive as the cutting and rewelding of stainless materials is undesirable in many respects. Since critical materials received source inspection and since Mill Test Reports sent to the jobsite were checked and approved by Duke Engineering, it is felt that erected "Untraceable" materials meet specification requirements; and to replace these materials with only an equal traceable material does not appear to be the best solution to the problem.

Duke's program to justify "Untraceable" materials consists of the following:

- a) The Construction Department has reviewed all systems requiring traceability and documentation. Each "Untraceable" component has been identified and noted on a print of the piping system drawings with a full description of the component.
- b) The Engineering Department has reviewed each "Untraceable" component noted on the piping drawing and has defined those materials which are acceptable to remain or which must be replaced within the system.
- c) The justification for utilizing "Untraceable" materials in a system has been carefully examined by Duke's management; and Duke feels that there are four (4) very sound reasons, any one or more of which may be basis for the justification of leaving a material component within a piping system as follows:
 1. System "traceability" is a Duke requirement only for Quality Control purposes and is not required by Code. Therefore, the material is acceptable without replacement.
 2. By Engineering review, the material component is of the correct generic type material and pressure-rating per detailed piping specifications. Therefore, the material is acceptable without replacement.

3. Based on design makeup capacity, a postulated failure of the material component would not render the system inoperable for safety function intended.
 4. Postulated failure of the material component would not cause uncontrolled release of radioactivity per established criteria.
- d) If "Untraceable" materials do not meet one of the four criteria listed above, they are replaced within the system. Currently, all replacement work has been done and only those materials which are justifiable remain within the systems. A review of the Construction site records indicates a significant reduction in "Untraceable" materials. This is the result of having obtained the proper documentation for some materials, of having replaced some materials that could not be justified, and of having completed most of the Quality Assurance documentation work.
 - e) Not only were materials required to be justifiable from an Engineering viewpoint, but the material item itself had to be visibly examined by Construction Department personnel and confirmed to be the correct generic type material and pressure-rating by visible marking, magnetic check, necessary NDT measurement and/or physical measurements, etc.
 - f) Utilizing the design drawings marked with "Untraceable" materials, the Engineering Department prepared a formal Deviation Report on a systems basis which will become a part of the QA documentation package for that system to be turned over to the Steam Production Department after total system completion. It is important to recognize, however, that this Deviation Report as forwarded by the Engineering Department was only a starting point and the Deviation Report only became valid after the Construction Department certified the correct generic type material and pressure-rating as discussed above in item e).
 - g) Deviation reports have been completed by Engineering for Unit 1 and are being completed by Construction. A sample Deviation Report is attached to illustrate the "Untraceable" materials justification program.

3. QA Program Improvements:

As the problem of "Untraceable" materials became evident, both Duke Engineering and Construction Departments took steps to improve the overall program. Four basic changes were made as follows:

- a) The Engineering Department now requires that all Mill Test Reports be shipped with the material itself from the Vendor.
- b) The Construction Department has expanded its piping inspection program such that no piping materials are received into issuable inventory at the site unless proper documentation is delivered with the material and processed.
- c) Construction has expanded the QA program in that a completely new procedure for piping inspection and welding inspection of piping systems is being put into effect. This procedure has mandatory hold points in it, one of which is that before welding begins at a joint, the two pieces of material are checked for a heat number; and heat number is checked against a listing of valid heat numbers. At this point, the valid heat number is recorded so that traceability can be maintained in the event the heat number is obliterated. If no heat number exists on the pipe or if a number exists

but is not valid, the joint is not made until acceptable material is used. This procedure will be complete and in full effect by 12-1-71. This inspection is for both field-shop and in-place erection.

- d) Temporarily for Units 2-3 systems until 12-1-71 when the procedure discussed above in c) becomes effective, the Construction Department has expanded the piping inspection program so that piping will be inspected for heat number traceability within two or three days after erection. This allows Construction to know the status of traceability of all erected systems for Units 2 & 3 and, if necessary, to remove any "Untraceable" material before entire systems are completed. This inspection is for both field-shop and in-place erection.

With the above changes in Duke's Quality Assurance, the problem of "Untraceable" materials should be minimized for Units 2 & 3.

4. Summary of Overall Situation:

Duke's response to the Unit 1 "Untraceable" materials problem, above, describes in detail the work done to define and resolve the problem, and the solution presented represents the best overall Engineering solution when all aspects are considered.

Material identification problems on Ocone 1 were partially due to changes in criteria and developing codes and standards. Many materials were ordered prior to release of the AEC's Appendix B. All of these facts contributed to the loss of effectiveness in some areas of the Duke Quality Assurance program.

Appropriate steps have been taken to:

- a) Remove or justify use of "Untraceable" materials on Unit 1
- b) Avoid use of "Untraceable" materials on Units 2 & 3

DUKE POWER COMPANY
ENGINEERING DEPARTMENT - MECHANICAL SECTION
DESIGN DEVIATION REPORT

Date: 11-12 71 Report No: MDG DR # 37.8
To: C. E. Watkins Originated By: R. L. Otertag
Station: Oconee 1 Approved By: R. E. Miller
System: 60(1) Sheet 1 of 2
File #: OS 27.4

Deviation Reported By and Date: D. L. Freeze 10-19-71

Nature of Deviation: Inability to properly document traceability of piping system materials.

Engineering Analysis Required: Review of system deficiencies and classify material based on one or more of the following items:

1. System "traceability" is a Duke requirement only for Quality Control purposes and is not required by Code. Therefore, the material is acceptable without replacement.
2. By Engineering review, the material component is of the correct generic type material and pressure-rating per detailed piping specifications. Therefore, the material is acceptable without replacement.
3. Based on design makeup capacity, a postulated failure of the material component would not render the system inoperable for safety function intended. Therefore, the material is acceptable without replacement.
4. Postulated failure of the material component would not cause uncontrolled release of radioactivity per established criteria. Therefore, the material is acceptable without replacement.
5. The material is not justified by any one of the four (4) reasons above. Removal and replacement is mandatory.

Engineering Disposition of Deviation: Forwarded to the Construction Department for documentation purposes in QA records.

Engineering Department Certification:

Construction Department Certification:

S. K. Blackley, Jr.
Principal Mechanical Engineer

R. E. Miller

By: R. E. Miller
Senior Engineer

This certifies that subject listed materials have been inspected and confirmed to be the correct generic type material and pressure rating.

Construction Representative _____ Date _____

REM:rje

cc: D. G. Beam
J. M. Curtis

Material Component	Item No.	Drawing No.	Justification for not Documenting Materials
1" S. 40 S.S. A-376 Gr. TP 304H Pipe	1	0-435A	2,4
4" S. 10 S.S. A-376 Gr. TP 304H Pipe	2	0-435A	2,4
4" S. 10 S.S. A-376 Gr. T' 304H Pipe	3	0-435A	2,4
1" S. 40 S.S. A-376 Gr. TP 304H Pipe	4	0-435A	2,4
1" S. 40 S.S. A-376 Gr. TP 304H Pipe	5	0-435A	2,4

POOR ORIGINAL