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50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 05000287
AUTH.NAME AUTHOR AFFILIATION
HAMPTON,J.W. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Responds to NRC 950621 ltr re deviations noted in insp repts 50-270/95-09 & 50-287/95-09.Corrective actions:schedule for completion of fatigue analyses for RCS will be developed by 960301.

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P R I O R I T Y 1 D O C U M E N T

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Oconee Nuclear Site
P.O. Box 1439
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J. W. HAMPTON
Vice President
(803)885-3499 Office
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DUKE POWER

July 21, 1995

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

Subject: Oconee Nuclear Site
Docket No. 50-269,-270,-287
Inspection Report 50-269, -270, -287/95-09
Reply to Notice of Deviation

Dear Sir:

By letter dated June 21, 1995, the NRC issued a Notice of Deviation as described in Inspection Report No. 50-269/95-09, 50-270/95-09, and 50-287/95-09.

Pursuant to the provisions of 10 CFR 2.201, please find attached written responses to the Notice of Deviation in the subject inspection report.

Very truly yours,

J. W. Hampton

Attachments

cc: Mr. S. D. Ebneter, Regional Administrator
U.S. Nuclear Regulatory Commission, Region II

Mr. L. A. Wiens, Project Manager
Office of Nuclear Reactor Regulation

Mr. P. E. Harmon
Senior Resident Inspector
Oconee Nuclear Site

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Attachment 1
Reply to Notice of Deviation
Deviation 270, 287/95-09-02

By letter dated November 4, 1983, Duke Power Company responded to the NRC issued Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." Section 2.2 of the licensee's generic letter response indicates that portions of the Main Steam System from the steam generator to, and including, the first normally closed or automatic isolation valve, are safety-related.

Contrary to the above, since initial operation, the Channel "A" and "B" solenoid valves which operate the Main Steam Stop Valves (MSSVs) were not safety-related. The MSSVs are the first automatic isolation valves for the Main Steam System headers

RESPONSE:

1. Reason for the deviation:

Duke Power Company (Duke) denies this deviation based on the following discussion:

Duke's response to Section 2.2.1.1 of Generic Letter (GL) 83-28 was provided within the context of the following statement in the GL:

> "For equipment classification, licensees and applicants shall describe their program for ensuring that all components of safety-related systems ... are identified. This description shall include:
>
> The criteria for identifying components as safety-related within systems currently classified as safety-related. This shall not be interpreted to require changes in safety classification at the systems level."

Duke has never considered the Channel "A" and "B" solenoid valves (which operate the MSSVs) a part of the Main Steam System. Duke considers these solenoid valves a part of the Electro-Hydraulic Control (EHC) System for the main turbine. The control systems which support the main turbine were originally procured as part of the turbine package from General Electric as normal industrial grade equipment (i.e., not safety-related). These control systems which support the main turbine also support the MSSVs.

Therefore, the statement in Section 2.2 of Duke's November 4, 1983 response to GL 83-28 which states that we consider "portions of the Main Steam System from the steam generator to, and including, the first normally closed or automatic isolation valve" as safety-related, was never intended to include the supporting structures, systems, and components (SSCs) of the EHC System. In addition, there was no intent to upgrade the EHC System to safety-related at the time of Duke's GL 83-28 response since the wording of Section 2.2.1.1 of the GL stated that non-safety systems would not have to be upgraded to safety-related.

Although Duke believes that it is in compliance with Generic Letter 83-28 as stated above, Duke recognizes that the response to Generic Letter 83-28 was not effective in clarifying the scope of the Oconee QA program. Therefore, an effort is underway to clarify Oconee's QA program scope and the Duke response to Generic Letter 83-28. This effort was described to the NRC in meetings dated February 6, 1995 and May 1, 1995. In addition, submittals dated April 12, 1995, and July 10, 1995 have been made to clarify the November 4, 1983 Duke response to Generic Letter 83-28 Section 2.2.1.1.

To clarify the intent of the safety-related classification of "portions of the Main Steam System from the steam generator to, and including, the first normally closed or automatic isolation valve", the following information is provided:

> The classification of these stated portions of the Main Steam System at Oconee as QA-1 is not based on functional requirements to mitigate accidents (specifically the Main Steam Line Break (MSLB) accident). As described in the April 12, 1995 submittal to the NRC regarding the original Oconee QA-1 licensing basis, the application of 10CFR50 Appendix B to SSCs focused primarily on the Large Break LOCA/LOOP accident.
>
> The original Oconee FSAR (Appendix 1C, Section 1C.2.3) states that "capability is provided to shut down safely all three units in the event of a maximum hypothetical earthquake. The following equipment and portions of systems can withstand the maximum hypothetical earthquake:... Main steam lines to and including turbine stop valves." The licensing basis for Oconee is that a seismic event was used to provide the design criteria for piping, equipment, and structures used for mitigation and prevention of accidents for safe shutdown of the plant.

The seismically supported portions of the main steam lines are a good example of this seismic design approach at Oconee. Internal design correspondence during the construction of Oconee (attached) indicates that, based on discussions with the AEC, "the main steam lines up to and including the main steam stop and control valves had to be designed for earthquake conditions such that the integrity of the line would be maintained in the event of earthquake, thereby preventing a failure or rupture of the Reactor Building liner." Rigid and hydraulic shock suppressors were added to seismically support the portions of the main steam lines that are currently designated as QA-1. The seismic design did not include the supporting systems and components for the Main Steam System, such as the MSSV solenoids, since the design criterion is to provide seismic support of the main steam piping through the MSSVs.

Thus, the MSSV solenoid valves were never intended to be included under the full scope of the 10CFR50 Appendix B program. Rather, Oconee's commitment consisted of designing the Main Steam lines to withstand seismic loading. Correspondence with General Electric (attached) shows that further design criteria were not imposed relating to the function of the stop valves. Oconee then classified the piping as Duke Class F, and accordingly imposed QA-1 requirements consistent with the scope of the Duke Class F/Seismic design boundaries.

2. Corrective steps that have been taken and the results achieved:

   None

3. Corrective steps that will be taken to avoid further deviations:

   None

4. Date when full compliance will be achieved:

   Oconee is currently in full compliance.

Attachment 2
Reply to Notice of Deviation
Deviation 270, 287/95-09-03

FSAR section 5.2.2.2 states that the design, fabrication, inspection and testing of the Reactor Coolant piping is in accordance with USAS B31.7, Code For Pressure Piping, Nuclear Power Piping, dated February, 1968. Final Safety Analysis Report (FSAR) section 3.2.2.1 defines the Reactor Coolant piping and the connecting piping greater than one inch in diameter as Class I piping.

Contrary to the above, since initial operation, portions of the piping connected to the Reactor Coolant Systems for all three units at Oconee are designed, fabricated, inspected, and tested as USAS B31.7, Class II piping.

RESPONSE:

1. Reason for the deviation:

Duke Power Company acknowledges this deviation.

The cause of this deviation is inadequate licensing documentation to support actual plant design.

In a letter dated August 30, 1994, after a review of information related to the design of the Reactor Coolant System (RCS) at Oconee, the NRC requested information on an apparent noncompliance with the Oconee FSAR.

In a letter dated October 3, 1994, Duke responded to the August 30, 1994 NRC letter by providing a detailed information letter on the history of the design of the Oconee RCS. This letter described Oconee's interpretation of the FSAR regarding Construction Code requirements for the RCS. In the October 3, 1994 letter, Duke communicated that internal design documentation indicated that the RCS as defined in FSAR Section 3.2.2.1 was not completely analyzed in accordance with construction code USAS B31.7. In addition, Duke stated that the FSAR contained adequate information to support the Duke position that portions of the RCS were not required to fully meet the B31.7 construction code fatigue analysis requirements.

In a letter dated April 27, 1995, the NRC responded to the October 3, 1994, letter stating that their interpretation of the FSAR indicated that the RCS should fully

meet the B31.7 construction code requirements. After further review of the Oconee FSAR, Duke has concluded that the FSAR does not clearly describe the original design of the RCS. This is evident by a review of the NRC Safety Evaluation Report (SER) for the Oconee FSAR. The NRC SER indicates that the NRC interpreted the Oconee FSAR as stating that the RCS was fully designed to USAS B31.7. This discrepancy between Oconee RCS design and licensing was not appropriately resolved at the time of plant licensing.

2. Corrective steps that have been taken and the results achieved:

In a letter dated June 26, 1995, Duke Power Company committed to perform a fatigue analysis for the Reactor Coolant System attached piping out to the first valve as required by USAS B31.7. In addition, this letter stated that a schedule for completion of the fatigue analysis would be provided to the NRC.

3. Corrective steps that will be taken to avoid further deviations:

a) A schedule for completion of the fatigue analyses will be developed by March 1, 1996.

b) Fatigue analyses for the Reactor Coolant System attached piping out to the first valve will be completed by August 31, 1999.

c) In addition, Duke will revise the FSAR to reflect current as-built conditions for the RCS until the fatigue analyses are completed.

4. Date when full compliance will be achieved:

Duke will be in full compliance by August 31, 1999.

OS 215

ATTACHMENT

April 4, 19..

Mr. J. C. Mackey
General Electric Company
P. O. Box [illegible]
Charlotte, N. C.

Re: Oconee 1-2-3
Main Steam Stop & Control Valves
Seismic Restraints

Dear Sir:

With reference to your letter of February 19, 1969 on the above subject, this will confirm the reasons why the Oconee main steam stop and control valves require earthquake restraints.

You will recall when Duke Power Company applied for the construction permit for the Oconee nuclear station that we were the first applicant before the AEC seeking to eliminate Reactor Building isolation valves in the main steam lines. The proposal was approved by the AEC; however, results of this decision dictated that the main steam lines up to and including the main steam stop and control valves had to be designed for earthquake conditions such that the integrity of the line would be maintained in the event of earthquake, thereby preventing a failure or rupture of the Reactor Building liner. Under all circumstances, the Reactor Building liner plate and all lines penetrating the liner must be capable of preventing approximately zero leakage of the Reactor Building atmosphere to the outside atmosphere for public safety. You will recall that Duke had many specific questions concerning the leakage of the GE stop and control valves under low pressures such as might be experienced after a nuclear accident inside the Reactor Building. The questions referred to here are those asked when Duke was applying for the construction permit for this statio..

In order to control the main steam system under earthquake conditions, it is necessary that many rigid and hydraulic shock suppressors be added to the lines between the Reactor Building and the main steam stop and control valves. As the main steam stop and control valves are very heavy with respect to the main steam lines, it is necessary that the movement of these valves be restricted in such a way that deflections in the line are small enough that the system does not overstress under earthquake forces.

You will note from the configuration of the lugs requested on the valve assembly that we plan on restraining these valves in the horizontal plane only. As the earthquake forces in the vertical direction are less than the weight of the valve assembly itself, the valves will tend to remain stable in the vertical direction, thereby requiring no additional vertical restraints. Horizontal loads which we transmitted to GE sometime

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back were based on our earthquake model. The loads were specifically obtained by multiplying the weight of the valves by the earthquake forcing factor expected at the particular location in the powerhouse which is determined by a separate seismic analysis of the powerhouse structure.

Our previously submitted sketch, 70-103, shows the direction of forces and the magnitude of some applied to the main steam and control valve assembly. The method for attaching these restraints to the valves was resolved by our letters of 8/23/68, 11/21/68 and 12/12/68. No code requirements, etc, enter into the valve design as a result of being designed for earthquake.

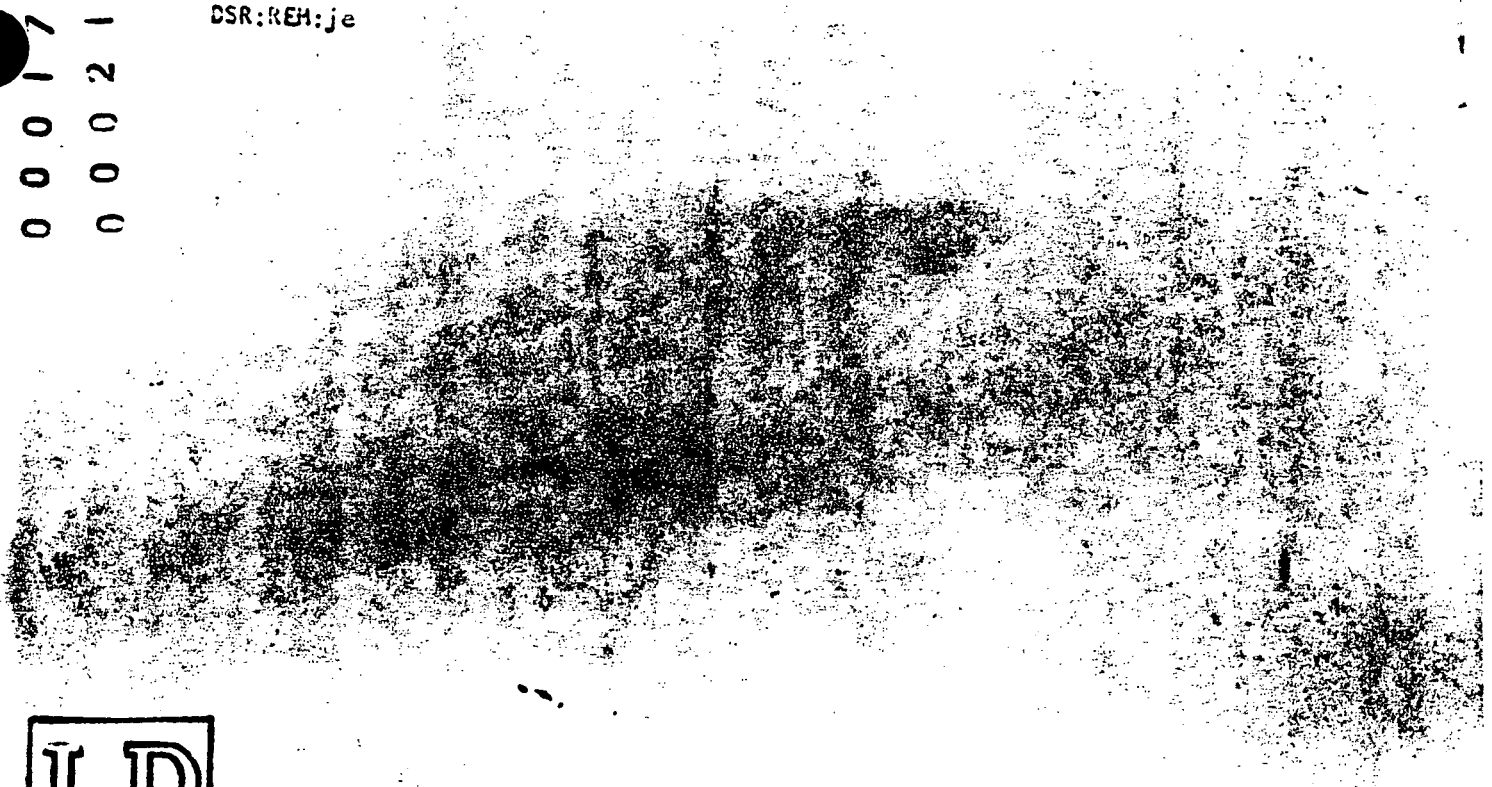
We trust that the above information is sufficient for us to proceed with this design requirement; however, if additional is needed, please advise us on this matter.

Very truly yours,

W. H. Owen
Principal Mechanical Engineer

By: D. S. Robbins

DSR:REM:je



Oconee
M. Stm. System

OS 215

ATTACHMENT

Phil Croft
Operations Quality Assurance

Re: Oconee Nuclear Station
Turbine Stop Valves
Files OS-215 and OS-416

Please refer to your letter of November 27, 1974 regarding quality assurance documentation for the Oconee turbine stop valves.

Enclosed are several letters showing the events that lead to the present design and classification of the Units 1, 2 and 3 turbine stop valves. Each letter is briefly outlined below. First, I will begin with the most recent letter which offers a complete recap of this subject and answers your question regarding seismic design of these valves. Letters prior to this will document the above.

1) In response to G. E.'s request of February 19, 1969 for explanation of the requirement for seismic restraints on the turbine stop valves, R. E. Miller stated our position in his letter of April 4, 1969. He confirmed approval by the AEC of the elimination of the Reactor Building isolation valves with the condition that the integrity of the main steam line through the turbine stop valves be maintained in the event of an earthquake. This was to be done with rigid and hydraulic shock suppressors installed on the main steam line and turbine stop valve. No special code requirements were to enter into the valve design itself.

2) By letter of October 3, 1967 W. O. Owen informed G. E. of our position regarding the requirement for Reactor Building main steam isolation valves. He pointed out that Duke had documented that an unisolated blowdown of both steam generators, with or without tube failures, would not result in an environmental dosage greater than the limits stated in 10CFR100. This established the basis for the elimination of the isolation valves and the assignment of that function to the turbine stop valves.

3) Minutes of an April 16, 1968 meeting with G. E. in Schenectady substantiates two important facts. Because of the elimination of the Reactor Building isolation valves, the turbine stop valve hangers were to meet Class I nuclear design, but no special ASME Code requirements would be imposed on the stop valve design.

4) Duke's letters of August 23 and November 21, 1968, and G. E.'s letter of September 3, 1968 established the seismic loads and locations of restraints on the stop valves for all three units.

Thus, we have complied with the Oconee FSAR which requires that the main steam line from the steam generator through the turbine stop valve be designed to withstand seismic loading. This was done, not by showing proof of seismic integrity of the stop valves but by designing a system of restraints and shock suppressors for the main steam line and the stop valve. While this is not

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the criteria followed today. Due to the state of the art at that time, this design was accepted by the AEC and Duke Design Engineering.

Therefore, your request for verification of seismic design of the turbine stop valves is not applicable. Orders for replacement parts for these valves should be released to G. E. with only the requirement that they be furnished with Certificate of Conformance to the original G. E. and Duke specifications. Please advise if we can be of further assistance.

S. K. Blackley, Jr., Chief Engineer
Mechanical & Nuclear Division

D. G. Gardner
Engineer Associate

DGG:sr

NO ATTACHMENT REC'D

cc: R. E. Miller, w/attachment
T. F. Wyke, w/attachment
J. K. Berry, w/attachment
D. H. Gabriel, w/attachment