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DUKE POWER COMPANY

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373-4011

July 29, 1983

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50-369/370
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Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Model D2/D3 Steam Generator
Utility Design Review Panel

Dear Mr. Eisenhut:

In response to observed tube wear problems and other operating experience with Westinghouse Model D2/D3 steam generators, a Utility Design Review Panel (DRP) was formed May 12, 1982. This activity was undertaken as a joint effort among the three represented utilities and was carefully coordinated with Westinghouse and the Nuclear Regulatory Commission staff. The basic work of the review was completed with the issuance of the report entitled, "Utility Design Review Panel Evaluation Report, D2-D3 Steam Generator Design Modification", dated January 1983. The DRP report was submitted to the NRC staff January 17, 1983. A presentation and discussion meeting was held between the Design Review Panel co-chairmen and the NRC staff on January 21, 1983. The U. S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, issued NUREG-0966, "Safety Evaluation Report, Related to the D2-D3 Steam Generator Design Modification Dated March 1983".

In Section 3.6 of the staff Safety Evaluation Report (SER), it was noted that the DRP Quality Assurance (QA) reviewer should verify implementation of the Westinghouse QA record plan. This action was accomplished during a visit by a DRP representative to Pittsburgh on April 4, 1983. Attached is a copy of the Trip Report which documents the review performed and verifies program implementation.

Since release of the NRC staff SER on the D2/D3 modification, several plant specific SERs have been issued to support installation of the modification. Concurrently, Westinghouse has continued to develop and refine certain analyses and calculations. Some of these have required revisions to Westinghouse documents filed earlier with the NRC staff. As a consequence of the continuing Westinghouse effort, some additional DRP review has been performed. This activity was discussed with the NRC staff in a meeting on March 24, 1983.

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Most of this additional Westinghouse effort has been done to better define the effects of the forward flushing feedline warming transient on the modification. The chairmen of the DRP have reviewed the status of the Westinghouse work and the DRP's subsequent technical review in this area. We believe that several approaches to feedline warming including either forward or reverse flushing are appropriate and can be used subject to design and operating limits documented in the Westinghouse submittals. It is our judgment that although some revision might have been indicated in the January 1983 DRP report, such revision is not necessary since each utility has implemented or will implement appropriate measures to assure feedwater temperature/flow restrictions are satisfied.

Future analysis which results in the need for changes in either hardware or operating procedures on any particular unit should be jointly handled among Westinghouse, the affected utility and the NRC, as necessary, through normal regulatory interfaces. This will include submittal of revisions to documents previously submitted by Westinghouse or other documentation, as appropriate. Future generic D2/D3 steam generator issues should be handled by Westinghouse and the NRC in the same manner as other generic concerns. It is, therefore, our conclusion that the Design Review Panel should be dissolved and its work declared complete.

This effort was a unique experience for all parties and was, in our opinion, a model for cooperative work among utilities, manufacturer, and regulators.

Very truly yours,

S. K. Blackley, Jr., Chairman
Design Review Panel

GAC/php

Attachment

cc: M. B. Whitaker, Co-Chairman
Design Review Panel

T. E. Haynes, Co-Chairman
Design Review Panel

SOUTH CAROLINA ELECTRIC & GAS COMPANY
Inter-Office Correspondence

QUALITY ASSURANCE
(Office)

Subject Joint Utility Steam Generator Design Review Panel - QA Discipline Review

Date May 16, 1983

To M. B. Whitaker, Jr.

Attention of

Attached is the report of the DRP trip I made to Westinghouse on April 4, 1983 to followup on their records effort as stipulated in the SER on the steam generator modification.

I discussed the results with Jack Spraul of the NRC on April 25, 1983 and briefed him as to the status of the task force records program. I described how the records were identified and accumulated but microfilming was not complete. I indicated I believed the effort was adequate and filming was only a matter of time. Jack concurred and requested a copy of my report. Please make arrangements for the submittal to the NRC.

The QA disciplines effort on the Joint Utilities Design Review Panel is now complete. If any further questions arise, please let me know.

D. R. Moore

D. R. Moore

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Attachment
cc: S. K. Blackly, Jr. - Duke Power
G. A. Copp - Duke Power ✓
T. E. Haynes - TVA
O. W. Dixon, Jr.
D. A. Nauman
R. B. Clary
L. Brown - W

TRIP REPORT

SUBJECT: Joint Utilities Design Review Panel QA Discipline Meeting with Westinghouse in Pittsburgh, April 4, 1983.

PURPOSE: To examine objective evidence supporting W answers to 3 action items which were communicated to the NRC on 2/2/83. Also to verify adequacy of W steam generator task force records efforts as committed to the NRC on 2/3/83.

AREAS EXAMINED: The following areas were examined as detailed in the attached telephone and conference memorandum (D. R. Moore of SCE&G with J. Spraul of NRC) dated 2/10/83.

I. W Manifold Specific Audit of Computer Program Verification

II. W Procedure Review and Implementation Surveillance Activities at SSPB Test Facility

III. W Dimensional Checks of Steam Generator Mock-ups at W Tampa

IV. W Steam Generator Task Force Records Identification and Accumulation Program

PERSONNEL CONTACTED:

L. Brown
R. Bremmer
H. Clawson
C. Fuchs
R. Petsche
T. Sobek

RESULTS:

Area I - W Manifold Specific Audit of Computer Program Verification

Internal audit #AI-82-506 was performed by W and reported via report #PI & DA-82-2882 dated November 15, 1982. The audit revealed that computer programs were utilized by the steam generator task force which had not been verified. In particular, THSHAPE, INTFDS, ANDRE and some hand held programmable computer programs required verification. Three audit findings (#'s 03N04, 03N08, and 03N11) were made and issued to personnel responsible for using the subject programs. Correspondence existed and was examined which provided corrective action to the findings. Letter SGTF-0-1179(82) dated 11/9/82 addressed ANDRE. Letter SGTF-D-1189(82) dated 11/10/82 addressed programmable computer programs, and letter SGTF-D-1200(82) dated 11/11/82 addressed THSHAPE and INTFDS. All programs in question were verified. Audit verification and closure was performed and reported via PI & DA-83-707 dated 1/18/83.

The audit process was adequately performed and all problems identified were resolved. The verification of computer programs used by the steam generator task force is considered acceptable.

Area II - Westinghouse Procedure Review and Implementation Surveillance Activities at SSPB Test Facility

A W surveillance trip was made to the SSPB test facility September 20-29, 1982 for the purpose of reviewing procedures and verifying implementation. The trip report prepared was PI & DA-82-2460 dated 10/14/82. Examination of this report revealed that test procedures were reviewed for adequacy in addressing the test propectus (specification) and testing was observed to be in compliance with the procedures. The additional effort provided by W in response to the DRP recommendation in this area is considered acceptable.

Area III - Dimensional Checks of Steam Generator Mock-Ups at Westinghouse Tampa

A report of dimensional inspections performed September 1982 was transmitted to W by letter 83-151-RHD dated 2/14/83 subsequent to the request to have this information available for DRP verification. The dimensional report was examined and reflected the nozzle dimensions of the 5 mock-ups used in Tampa acceptably related to steam generators, although the installation process was modified to field fit as described by W in telephone conversations to answer NRC posed questions. The effort provided by W in response to the DRP recommendation in this area is considered acceptable.

Area IV - Westinghouse Steam Generator Task Force Records Identification and Accumulation Program

A listing of lifetime records (attached to this report) was prepared by W which itemized the records needed to substantiate the steam generator task force efforts regarding the D2 and D3 feedwater inlet modification design. The list was scrutinized and discussions were held with W personnel leading to the conclusion that all pertinent records were addressed. Also, W has assigned individuals responsibilities for segments of the records list to assure they were accumulated and presented for filming. The list identifies some records in the design, manufacturing and installation process that are within standard W/WRD acceptable QA programs (ie, at WEMD & WNSID) which are compiled, filmed and stored within those programs and not unique to the task force. As such, the task force records list indicates these records are not within their file and indicates where they can be located. This method of keeping track of records filed elsewhere is considered acceptable.

Representative samples of records were examined and discussions held with W responsible personnel to verify listed records existed, were accumulated, were filmed and were filed. The records for the .417 model testing, the Wear Testing, and Analysis for structural, bolting and thermal/hydraulic (including manual calculation books) were examined. These records were very extensive in that hundreds of volumes of test data were located in the data reduction group that were generated from FM tapes used during performance of tests and a high volume of calculational data existed.

It was determined that W did have cognizance of the records contained in their listing although some had yet to be filmed and permanently filed. Investigations were made to determine whether sufficient protection was afforded the records yet to be filmed so that accidental destruction would not devastate the task force engineering effort. These investigations disclosed that even though filming had not been completed, other sources of the same information existed in different remote locations or had already been filmed in a different category of records on the W listing. That is, records such as original FM tapes were filed elsewhere and serialized correspondence had already been filmed in conjunction with letter files.

Exceptions did exist in that one set of raw test data on the .417 model test and some hand calculations in the analytical area were one of a kind. When discovered during this visit, W reproduced and remotely filed the test data book and moved the calculations ahead in the filming priority sequence to eliminate vulnerability.

The effort provided by W in completion of the original plan for task force records identification, accumulation and filming has resulted in an acceptable records program. The only actions remaining at W is to complete filming which is projected for the end of May, 1983. Any subsequent records that may need to be generated will, with a high degree of confidence, end up in the program and the DRP concludes the current status acceptable.

CONCLUSIONS:

As result of this visit, the following conclusions are drawn and the DRP QA discipline review deemed completed.

1. Documented evidence supporting answers to NRC questions given via telephone, exists and is adeuqate.

2. Westinghouse records effort has identified and accumulated adequate records with filming in process. Also, adequate protection is afforded those records awaiting the filming process.

Prepared by: D. R. Moore

D. R. Moore, Manager
Quality Assurance - SCE&G

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File _____

SCE&G QUALITY ASSURANCE

TELEPHONE AND CONFERENCE MEMORANDUM

DATE February 10, 1983

BY: D. R. Moore DEPARTMENT Quality Assurance

TELEPHONE CALL [ ] CONFERENCE [X]

WITH: ~~Jack Sprawls~~ Spraul Jan. NRC QA Program Reviewer, Tuesday, February 1, 1983.

COMPANY: Nuclear Regulatory Commission

SUBJECT:

NOTES: ~~Jack Sprawls~~ Spraul Jan. contacted me to answer three questions he had with the QA Section of the Joint Utility Design Review Panel Report. His three questions were: (1) Did Westinghouse perform the manifold specific audit dealing with computer programs and what were the results? (2) Did Westinghouse visit the SSPB test facility to verify procedure adequacy and implementation, and what were the results? (3) Did Westinghouse perform a dimensional check of the mock-up steam generator nozzle they were using in Tampa to refine the installation procedure?

I indicated to Jack during this conversation that I did not know the current status of the questions but would contact Westinghouse and call him the following day with the answers.

Wednesday, February 2, 1983

I called Jack ~~Sprawls~~ Spraul Jan to provide responses to the questions he had asked the previous day. These responses were: (1) Westinghouse had performed the manifold specific audit of computer program verification and the results were acceptable. (2) Westinghouse did travel to the SSPB test facility to review procedures for adequacy in meeting the test prospectus and for performing surveillance to verify

Copies To:

O. W. Dixon
D. A. Nauman
M. B. Whitaker
R. B. Clary
Bob Croley
W. A. Williams
Ollie Bradham

that testing was done in accordance with those procedures. (3) Westinghouse did dimensionally check the mock-up nozzle used in Tampa to see if it represents actual steam generators. However, this inspection was deemed not relevant since the process was changed to field fit the assemblies to the actual steam generators by machining and/or welding.

Jack thanked me for this information and indicated that he would be preparing an SER dealing with the steam generator modification report. He indicated to me that he would call me back the following day and read the SER he had prepared to obtain my opinion. I indicated to Jack that I was negotiating with Westinghouse to have objective evidence provided to me to substantiate the answers to the questions I had just given him. Jack indicated he was satisfied with the answers and this approach and would call me the following day.

Thursday, February 3, 1983

Jack called me but I was out of the office and I returned his call in the afternoon. Following the previous day's discussion, Jack read the SER he had prepared that was written around the QA section of the Joint Utilities Design Review Panel Report. I had no problems with the wording of the SER as it appeared to be accurate and it did incorporate the answers to the questions that I had given Jack the previous day. During the reading of the SER, however, a new issue arose which was previously not discussed. This issue dealt with the subject of records. In the DRP report, I indicated that records were being used by the Steam Generator Task Force personnel and that Westinghouse provided a game plan wherein a responsible individual would establish what constituted the record package, have these records accumulated, and have them turned over

to the Permanent Record Retention facility at Westinghouse. I indicated that if this commitment were met that the records portion of the program dealing with the steam generator manifold would be acceptable. Jack expressed concern in that no provision was made by the DRP to follow-upand verify that Westinghouse implemented the plan dealing with records. I indicated to Jack that potentially months could pass before this effort were complete and the DRP would essentially be disolved, thereby not providing DRP means to follow-up Westinghouse actions. I acknowledged to Jack that good QA practice would predicate a follow-up, but that I was convinced that Westinghouse would perform as stated and the records area thus is ultimately acceptable. Jack indicated that he understood the status of the DRP but was adamant that a follow-up needed to be performed. He indicated that since I was the reviewer, I should make a personal commitment to, at some date in the future, return to Westinghouse to make sure that the records effort was completed. He reworded the SER to indicate that this would be done by the lead QA member of the DRP, and as such, I will have to return to Pittsburgh at some future date to verify that Westinghouse effort with regard to QA records was completed.

During this discussion I also relayed to Jack that if I had to go to Pittsburgh to follow-up the records area, I would use that opportunity also to examine the objective evidence that Westinghouse had regarding the three questions that he asked and I answered the previous two days. The conversation with Jack Sprawls was concluded at this point and I apprised Mark Whitaker of the status and placed a call to Westinghouse to have them begin to research the status of the records effort at Westinghouse.

D. R. Moore

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D2 AND D3 STEAM GENERATOR FEEDWATER

INLET MODIFICATION

LIFE TIME RECORDS

SECTION	DESCRIPTION	FILE 2	RECORD FLOW SCHEDULE LOCATION FILE NO. RFS NO.
1.0	Design Records		
1.1	Design Specification	Y	
1.2	Design Report	Y	
1.2.1	Design Calculation Notes	Y	
1.3	Thermal and Hydraulic Report	Y	
1.3.1	Thermal and Hydraulic Design Calculation Notes	Y	
1.4	Design Drawing List	Y	
1.5	Project Information Package (PIP) (LIST)	Y	
1.6	Internal Audit Report	Y	
1.6.1	Close Out Listing	Y	
1.7	Final Design Review, Third Party Panel Report	Y	
1.8	Test Verification Documents	Y	
1.8.1	Thermal Hydraulic Tests	Y	
1.8.1.1	.417 Model Test	Y	
1.8.1.2	1/6 Scale Model Test	Y	
1.8.1.3	2/3 Scale Model Test	Y	
1.8.1.4	Swedish State Power Board (SSPB) Model Tests	Y	
1.8.1.5	Flow Stratification and Stripping Test	Y	
1.8.1.6	Normal and Feedline Hydraulic Loads	Y	
1.8.1.7	Additional Tests to be Identified		

RECORD FLOW SCHEDU

LOCATION FILE NO EFS NO

FILE

SECTION	DESCRIPTION	
1.8.2	Wear Tests	Y
1.8.2.1	Atomic Energy of Canada Limited (AECL) Wear Test	Y
1.8.3	Sludge Test	Y
1.8.4	Fastener Testing	Y
2.0	Procurement Process Document	N HNC
2.1	Manifold Purchase Order and Change Notices (LIST)	Y
2.1.1	ASZ	
2.1.2	DAP	
2.1.3	SUP	
2.1.4	etc. - (for each plant)	
2.2	Testing Purchase Orders and Change Notes (LIST)	Y
3.0	Manufacturing Records*	Y
3.1	List of Applicable NDE Procedures	Y
3.2	List of Applicable Welding Procedures	Y
3.3	List of Subcontract Purchase Orders, Change Notices and Equipment Description	Y
3.4	WEMD Q.A. Data Package	Y
4.0	Installation Records	N WSID
4.1	Manifold Installation	N WSID
4.1.1 etc.	Field Change Notes (FCN's) by Site	Y

* Original copy of all manufacturing records identif
shall be maintained by WEMD and index of records s

RECORD FLOW SCHED

LOCATION FILE NO RFS NO

SECTION	DESCRIPTION	IN FILE	
4.2	Handling, Storage and Receiving Procedure	N	NSID
4.3	Installation Drawing List	Y	
4.4	Completed Installation Procedure	N	NSID
4.5	Non-Destructive Examination (NDE) Procedures (LIST)	Y	
4.6	Welding Procedures (LIST)	Y	
4.7	As Installed Dimensional Records by Site	N	NSID
4.7.1 etc.	(Each Site Individually Identified)		
4.8	Field Deficiency Reports by Site	Y	
4.8.2 etc.			
4.9	Quality Release by Site		
4.9.1 etc.			
5.0	Instrumentation Records	Y	
5.1	Internal Instrumentation Field Change Notice (FCN) by Site	Y	
5.1.1 etc.	(Each Site Individually Identified)		
5.2	Internal Instrumentation Installation Procedure	N	NSID
5.3	Installation Drawing List	Y	
5.4	External Test Instrumentation FCN	Y	
5.5	External Test Instrumentation Installation Procedure	N	NSID
5.6	External Test Instrumentation Drawing List	Y	
5.7	Steam Generator Penetration FCN	Y	

RECORD FLOW SHEET

LOCATION FILE NO RFS NO

FILE

SECTION	DESCRIPTION		
5.7.1	(Each Site Individually Identified)		
5.8	Steam Generator Instrumentation Penetration Procedure	N	NSIP
5.9	S.G. Penetration Stress Report	Y	
5.10	Modified S.G. Vibration Test and Eddy Current Monitoring Specification	Y	
5.11	Field Test Data		

1.8 Test Verification Documents

1.8.1 Thermal Hydraulic Tests (TYPICAL)

1.8.1.1 0.417 Model Test

1.8.1.1.1 Test Prospectus/Specification
1.8.1.1.2 Design Reviews
1.8.1.1.3 IWR/P.O.# and C/N's
1.8.1.1.4 Model Drawings and C/N's (As Built) or Drawing List
1.8.1.1.5 Inspection Reports
1.8.1.1.6 Operational Procedures
1.8.1.1.7 Instrument Lists
1.8.1.1.8 Cal. Sheets, Certificates and Cal. Reports
1.8.1.1.9 Data Plots, Charts, Listings, etc.
1.8.1.1.10 Facility Log Book -
1.8.1.1.11 Model Design Analysis (Calc. Sheets)
1.8.1.1.12 Test Plan
1.8.1.1.13 Final Report