



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

JAN 20 1982

MEMORANDUM FOR: The Atomic Safety and Licensing Board  
for Virgil C. Summer Nuclear Station

FROM: Robert L. Tedesco, Assistant Director  
for Licensing  
Division of Licensing

SUBJECT: BOARD NOTIFICATION - PREHEATER TYPE STEAM GENERATOR  
(BN-82-02)

Enclosed is a memorandum dated December 7, 1981, providing a summary of a meeting held on November 20, 1981, with the Duke Power Company and Westinghouse Corporation. Information was presented regarding the results of testing of the Model D steam generator (similar to those at the Virgil C. Summer Nuclear Station) at two foreign reactors. Also enclosed is a letter from the Duke Power Company dated December 29, 1981, describing the results of its sequence of plant operation and steam generator inspection. To date, no indication of steam generator tube wear has been observed at the McGuire plant. The staff is closely monitoring the McGuire operation and steam generator test program and is evaluating information from the plant and the Westinghouse test program as it relates to the Virgil C. Summer Nuclear Station. We will keep the Board informed.

A handwritten signature in cursive script, appearing to read "R. Tedesco".

Robert L. Tedesco, Assistant Director  
for Licensing  
Division of Licensing

Enclosures:

1. Summary of Meeting held on  
November 20, 1981, dated  
December 7, 1981
2. Letter from Duke Power Company  
to NRC dated December 29, 1981

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V.C. Summer  
Docket No. 50-395

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JAN 20 1982

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DUKE POWER COMPANY  
POWER BUILDING  
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28202

WILLIAM D. PARKER, JR.  
VICE PRESIDENT  
STEAM PRODUCTION

December 29, 1981

Ralph Bikel  
Y 28408  
From: Skip Copp  
Duke Power  
(2 pages)  
TELEPHONE AREA 704  
373 4083

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Ms. E. C. Adenram, Chief  
Licensing Branch No. 4

Re: McGuire Nuclear Station  
Docket No. 50-369

Dear Mr. Denton:

On October 31, 1981 Duke Power Company notified the NRC Staff of tube degradation on a non-domestic Westinghouse plant with Model D steam generators similar to those at McGuire Nuclear Station. Subsequently a meeting was held on November 20, 1981 in Bethesda to brief the Staff on the details of the problem as well as Duke Power Company's plans for operation of McGuire. In particular Mr. H. B. Tucker outlined a planned sequence of plant operation, steam generator tube inspection and instrumentation installation. The purpose of this letter is to update the NRC Staff on the status of this effort to date and on plans for future operation.

Eddy current testing was performed on the 'A' Steam Generator to determine if a threshold power level existed at which tube vibration in the preheater was initiated. Rows 49, 48 and 47 were examined. This testing was conducted after two weeks operation at approximately 50% power and again after one week operation at 75% power. This testing was conducted by Babcock and Wilcox Company personnel utilizing a .590" diameter differential probe. A Zetec MIZ-12 multi-frequency apparatus was employed at frequencies of 130 khz, 200 khz, 400 khz and 550 khz. Since this examination was looking for wear damage at tube support plate locations both 130-550 khz and 200-400 khz mixed outputs were used to eliminate the support plate signal leaving only defect signals for analysis. An ASME Section XI type calibration standard was used.

Results of both of these inspections (i.e. after operation at 50% and 75% power) were reviewed by Babcock and Wilcox, Duke Power Company, Westinghouse and EPRI NDT personnel. A comparison with the results of the preservice inspection was made. No wear type indications were observed.

During the November outage, three transducers were mounted around the feedwater nozzle on each steam generator. These transducers are intended to provide an early indication of any gross mechanical vibration inside the preheater and will eventually be used in conjunction with the internal instrumentation when installed. To date no signals have been noted which correlate to preheater/tube vibration. Resonance peak which have been observed were caused by flow turbulence rather than any mechanical vibration phenomenon.

DWPC 07  
~~S-28408 D411~~

Mr. Harold R. Denton  
December 29, 1981  
Page 2

Currently, the unit is in the startup phase. Plans are to increase power to 90%, hold at that level for up to 4 days then increase to 100% for one day. Power operation would then continue for up to 6 weeks at power levels up to approximately 75%. The unit will then be shutdown, eddy current examination performed on all 4 steam generators and internal instrumentation mounted in one steam generator as described in our November 20, 1981 meeting in Bethesda. This operating plan represents our best efforts to balance testing and operational needs with a prudent course of action to assure the integrity of the steam generators. Minor changes to this planned sequence may occur due to unforeseen circumstances; however, we will keep you advised of any significant departure from this plan.

Please advise if you have any questions regarding this matter.

Very truly yours,



William O. Parker, Jr.

GAC/jfw

cc: Mr. P. R. Bemis  
Senior Resident Inspector  
McGuire Nuclear Station

Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303



DEC 7 1981

Docket Nos: 50-369  
and 50-370

LICENSEE: DUKE POWER COMPANY  
FACILITY: McGuire Nuclear Station, Units 1 and 2  
SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 20, 1981

A meeting was held with the licensee on November 20, 1981, to discuss preheater-type steam generator tube problems in foreign reactors as related to the operation of McGuire Unit No. 1. A list of attendees is shown on Enclosure 1.

The major briefing presentation was made by Westinghouse and included the results to date of testing of the Model D steam generator at two foreign reactors. These steam generators are of similar design (Model D) to those in the McGuire Unit 1 plant. Eddy Current testing has revealed that there are indications in the outer rows of tubes in essentially all steam generators so tested. Westinghouse has initiated a program of testing and tube examination along with analytical evaluations to determine the initiator of this tube degradation phenomena. Westinghouse believes at this time that tube degradation can be attributed to excitation of the tubes from high fluid velocities and/or non-uniform velocity distribution.

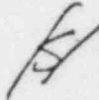
The licensee stated that McGuire Unit 1 was shut down on November 16, 1981 and that an operating plan for Unit 1 had been developed (see Enclosure 2). Rows 47, 48 and 49 in "A" Steam Generator (S/G) were Eddy Current tested. The results were negative with possibly one slight indication. The licensee has installed external vibration monitors (3 transducers per S/G) on each S/G. Upon completion of this inspection effort, the unit will be restarted and a power level of 75% established, approx. November 23. Upon completion of the traditional 75% plateau power ascension testing ( 2 weeks), the unit will be shutdown and S/G Eddy Current testing repeated on S/G "A". During unit operation, monitor instrumentation will be evaluated. Interim operation on the above basis appears appropriate at this time.

The licensee indicated that further operation at 90% power is contemplated to complete some ascension testing ( 1 week) provided no indications above 20% are discovered in S/G "A". Following this week of testing, evaluation of the monitoring, and evaluation of 50-90% power data, they would decide on escalation to 100% power for one day. Data evaluation at this time would determine whether or not the licensee would plan to continue operation at an acceptable power level or shut down at that time for further EC testing.

*Dupe of*  
*8-1-82 300006*

OFFICE							
NAME							
DATE							

Since the information presented by Westinghouse was proprietary, the licensee agreed to document the information pursuant to 10 CFR 2.790.



Ralph A. Birkel, Project Manager  
Licensing Branch No. 4  
Division of Licensing

Enclosures:

1. Attendance List
2. McGuire Nuclear Station,  
Unit 1, Operating Plan



McGuire

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ATTENDANCE LIST  
McGuire Nuclear Station, Units 1 and 2  
November 20, 1981

DUKE POWER COMPANY

Skip Copp  
H. B. Tucker  
C. W. Hendrix, Jr.  
A. L. Sudduth

WESTINGHOUSE CORP.

H. J. Connors  
I. C. Ratsep  
M. A. Weaver  
N. P. Mueller  
B. M. Bowman  
Antonio Aldeanueva  
O. J. Woodruff  
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OTHERS

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Consejo De Seguridad Nuclear - Spain  
Julian - Gorosarri -  
Almaraz Power Plant

Jose M. Zamarron

Project Manager - C. N. Almaraz  
Leif Ericson -  
Swedish Embassy Science Office

OFFICE					
URNAME					
DATE					

McGUIRE NUCLEAR STATION - UNIT 1  
OPERATING PLAN

- o CONDUCT EC EXAMINATION  
"A" S/G  
ROWS 49, 48, 47, [REDACTED]
- o INSTALL EXTERNAL INSTRUMENTATION  
"A" S/G
- o EVALUATE EC EXAMINATION RESULTS  
IF INDICATIONS <20% CONTINUE OPERATION  
IF INDICATIONS >20%, INSPECT 4 S/G, EVALUATE
- o ESCALATE TO 75% POWER, COMPLETE TESTS, (~2 WEEKS)  
- MONITOR INSTRUMENTATION, EVALUATE
- o SHUTDOWN - CONDUCT EC EXAMINATION  
"A" S/G  
ROWS 49, 48, 47, [REDACTED]
- o EVALUATE EC EXAMINATION RESULTS  
IF INDICATIONS <20% CONTINUE OPERATION  
IF INDICATIONS >20%, INSPECT 4 S/G, EVALUATE

# MC GUIRE NUCLEAR STATION - UNIT 1

## OPERATING PLAN

- o ESCALATE TO 90%, COMPLETE TESTS (1 WEEK)
- o MONITOR INSTRUMENTATION, EVALUATE
- o EVALUATE 50-90% POWER DATA
  - IF SATISFACTORY, CONTINUE OPERATION
  - IF UNSATISFACTORY, OPERATE AT REDUCED POWER
- o ESCALATE POWER TO 100% (MAXIMUM 1 DAY)
- o AT THIS POINT EITHER:
  - 1) OPERATE AT AN ACCEPTABLE POWER LEVEL BASED ON DATA AVAILABLE AT THIS TIME
  - 2) SHUTDOWN FOR EC INSPECTION AND INSTALLATION OF ADDITIONAL INSTRUMENTATION
- o WHILE SHUTDOWN
  - ECT INSPECTION 4 S/G
  - INSTALL INTERNAL INSTRUMENTATION 2 TUBES, 1 S/G
  - EVALUATE 50 - 100% POWER OPERATION PLUS OTHER DATA
- o DETERMINE APPROPRIATE NEAR TERM OPERATING CONDITIONS
  - USE OF COMBINED MAIN, AUXILIARY FEED NOZZLES
  - POWER LEVEL
- o RETURN TO POWER