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AUTH.NAME AUTHOR AFFILIATION
BOUCHEY,G.D. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Advises that Refs 3.5-21,3.5-22 & 3.5-23 of turbine missile analysis are being transmitted under separate cover as proprietary info,per NRC 820226 request.Tabulation of pl probabilities & Westinghouse 820205 ltr encl.

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Washington Public Power Supply System
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March 2, 1982
G02-82-284

Docket No. 50-397

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
TURBINE MISSILE ANALYSIS

Reference: Letter G02-82-33, G.D. Bouchey (SS) to A. Schwencer (NRC), Same Subject, dated January 13, 1982

The reference letter transmitted results of the turbine missile study for WNP-2. In a phone call with the NRC staff on February 26, 1982, copies of References 3.5-21, 3.5-22 and 3.5-23 were requested. These are being transmitted under separate cover as proprietary information. The NRC also requested a tabulation of P1 probabilities, as calculated in Reference 3.5-23, as a function of inspection interval. These are provided in the attachment, for the rated speed (R) and the design overspeed (O) condition.

Also attached is a letter from Westinghouse recommending inspection intervals for the three (3) low pressure turbines at WNP-2 ranging from 55.7 months to 57.8 months. This is based on a deterministic evaluation using actual material properties and chemistry to calculate critical crack size and postulated crack growth rates, based on the methodology in Westinghouse Report MSTG-1-P, "Criteria for Low Pressure Nuclear Turbine Disc Inspection", dated June, 1981.

B001
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The Supply System commits to performing inspections on low pressure turbine discs in accordance with the Westinghouse recommendations in the attached letter.

Very truly yours,

GD Bouchey

G. D. Bouchey
Deputy Director, Safety and Security

EAF/jca
Attachments: 1. Westinghouse Letter to Burns and Roe, WEBR-1-82-001, dated February 5, 1982
2. Table of P1 Probabilities from Westinghouse Report CT-24870, Rev. 1

cc: R Auluck - NRC
WS Chin - BPA
R Feil - NRC Site

Westinghouse Electric Corporation
Power Generation Group
Steam Turbine Division
Lester Branch Box 9175
Philadelphia Pennsylvania 19113

February 5, 1982

Mr. R. E. Snaith
Senior Project Engineer
Burns & Roe, Inc.
185 Crossways Park Drive
Woodbury, New York 11797

Washington Public Power Supply System
WPPSS Nuclear Project No. 2
B&R Reference Contract No. 2808-1
(W) Order No. NYPO-13501-T1
Turbine Generator & Accessories
WEBR 1-82-001

Dear Mr. Snaith:

In August 1981 the Nuclear Regulator Commission issued their position related to keyway and bore cracks in low pressure nuclear turbine discs to licensees.

Westinghouse supports that NRC position and recommends that WPPSS commit to this criteria. Westinghouse is now supplying inspection intervals which comply with the NRC criterion. These intervals are based on the attached "Westinghouse Inspection Criterion for Discs on Nuclear Low Pressure Turbine Rotors".

A deterministic evaluation has been completed on the WNP#2 low pressure rotors using actual material properties and chemistry. As a result of that evaluation:

		Calculated Inspection Interval
LP#1	S/N 23A3682 Rotor Test #TN-6799	57.8 months
LP#2	S/N 23A3683 Rotor Test #TN-6800	55.7 months
LP#3	S/N 23A3684 Rotor Test #TN-6801	56.3 months

It should be noted that if a crack is measured at any inspection, the inspection interval will become subject to other criteria as outlined in the "Safety Evaluation Report".

Also attached only to the WPPSS copy of this letter are the following reports for their use and information:

1) MSTG-1-P "Criteria for Low Pressure Nuclear Turbine Disc Inspection," June, 1981.

2) Topical Report WSTG-1-NP "Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking," May, 1981.

3) Topical Report WSTG-2-NP "Missile Energy Analysis Methods for Nuclear Steam Turbines," May, 1981

Please note the proprietary nature of all the attachments with the exception of topical reports WSTG-1-NP and WSTG-2-NP.

Very truly yours,

R. W. Ek
Project Administrator
Steam Turbine Generator Division

cc: WNP-2 Project Engrg. Manager (3)

attachments

2PR108a

TABLE IV (CONT'D)

DISK	LP	END	DEL T	PROB(R)	PROB(O)
4	2	GOV	43800.0	1.66-011	4.26-013
4	2	GOV	87600.0	5.10-009	9.06-011
4	3	GOV	8760.0	3.36-014	1.60-015
4	3	GOV	17520.0	2.26-011	6.62-013
4	3	GOV	26280.0	6.45-010	1.45-011
4	3	GOV	35040.0	5.70-009	1.07-010
4	3	GOV	43800.0	2.77-008	4.55-010
4	3	GOV	87600.0	2.06-006	2.35-008
5	1	GEN	8760.0	7.97-019	7.86-020
5	1	GEN	17520.0	3.61-015	2.28-016
5	1	GEN	26280.0	3.02-013	1.48-014
5	1	GEN	35040.0	5.63-012	2.31-013
5	1	GEN	43800.0	4.81-011	1.72-012
5	1	GEN	87600.0	1.92-008	4.49-010
5	2	GEN	8760.0	4.17-019	4.14-020
5	2	GEN	17520.0	2.07-015	1.32-016
5	2	GEN	26280.0	1.84-013	9.00-015
5	2	GEN	35040.0	3.57-012	1.45-013
5	2	GEN	43800.0	3.16-011	1.11-012
5	2	GEN	87600.0	1.40-008	3.16-010
5	3	GEN	8760.0	2.86-018	2.72-019
5	3	GEN	17520.0	1.09-014	6.67-016
5	3	GEN	26280.0	8.34-013	3.93-014
5	3	GEN	35040.0	1.45-011	5.72-013
5	3	GEN	43800.0	1.18-010	4.04-012
5	3	GEN	87600.0	4.00-008	9.07-010
5	1	GOV	8760.0	4.97-019	5.16-020
5	1	GOV	17520.0	2.37-015	1.57-016
5	1	GOV	26280.0	2.05-013	1.05-014
5	1	GOV	35040.0	3.89-012	1.67-013
5	1	GOV	43800.0	3.38-011	1.26-012
5	1	GOV	87600.0	1.41-008	3.45-010
5	2	GOV	8760.0	9.53-020	1.05-020
5	2	GOV	17520.0	5.56-016	3.91-017
5	2	GOV	26280.0	5.40-014	2.94-015
5	2	GOV	35040.0	1.11-012	5.06-014
5	2	GOV	43800.0	1.03-011	4.07-013
5	2	GOV	87600.0	5.24-009	1.35-010
5	3	GOV	8760.0	4.96-019	5.07-020
5	3	GOV	17520.0	2.37-015	1.55-016
5	3	GOV	26280.0	2.05-013	1.04-014
5	3	GOV	35040.0	3.90-012	1.65-013
5	3	GOV	43800.0	3.38-011	1.25-012
5	3	GOV	87600.0	1.42-008	3.43-010

OUTPUT SUMMARY

DEL T =	8760.0	PROB(R) =	1.16-007	PROB(O) =	1.70-009
DEL T =	17520.0	PROB(R) =	1.07-005	PROB(O) =	1.13-007
DEL T =	26280.0	PROB(R) =	1.01-004	PROB(O) =	9.04-007
DEL T =	35040.0	PROB(R) =	4.18-004	PROB(O) =	3.34-006
DEL T =	43800.0	PROB(R) =	1.14-003	PROB(O) =	8.35-006
DEL T =	87600.0	PROB(R) =	1.47-002	PROB(O) =	8.49-005