

ACCELERATED DOCUMENT DISTRIBUTION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9306170169 DOC. DATE: 93/06/10 NOTARIZED: NO DOCKET #
 FACIL: 50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Service 05000305
 AUTH. NAME AUTHOR AFFILIATION
 SCHROCK, C.A. Wisconsin Public Service Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Advises that on 930601, Zetec, Inc issued ltr to Eddynet customers advising of anomaly in mixing algorithm used to calculate & display simple two frequency mixes, as followup to NRC 930512 & 13 insp of SG eddy current program.

DISTRIBUTION CODE: A001D COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 4
 TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES	LTTR	ENCL	RECIPIENT ID CODE/NAME	COPIES	LTTR	ENCL
	PD3-3 LA	1	1		PD3-3 PD	1	1	
	HANSEN, A.	2	2					
INTERNAL:	ACRS	6	6		NRR/DE/EELB	1	1	
	NRR/DRCH/HICB	1	1		NRR/DRPW/OTSB	1	1	
	NRR/DSSA/SPLB	1	1		NRR/DSSA/SRXB	1	1	
	NUDOCS-ABSTRACT	1	1		OG/EFDCB	1	0	
	OGC/HDS1	1	0		REG FILE 01	1	1	
EXTERNAL:	NRC PDR	1	1		NSIC	1	1	

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 21 ENCL 0



WISCONSIN PUBLIC SERVICE CORPORATION

600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

June 10, 1993

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant

On June 1, 1993, Zetec, Inc. issued a letter to their EddyNet¹ customers notifying them of an anomaly in the mixing algorithm used to calculate and display simple two frequency mixes, and their intent to make available a corrected version of the EddyNet program. Zetec issued this letter based on follow-up work they performed to address an issue raised during a steam generator (SG) eddy current (EC) program inspection performed by the NRC at the Kewaunee Nuclear Power Plant (KNPP) on May 12 and 13, 1993.

During the inspection, a comparison of data from the 1991 and 1993 SG EC inspections showed an increase in the mix residual noise level for the 1993 data. The inspectors felt that this noise level increase could inhibit the ability to detect small indications at the edges of the tube support plates. A representative from Zetec present at the exit meeting committed to evaluate this concern.

¹EddyNet is an eddy current data analysis program owned by Zetec, Inc.

G:\WPFILES\LIC\NRC\ZETEC

150182

9306170169 930610
PDR ADDCK 05000305
G PDR

A001
110

Subsequent to the inspection, Zetec researched such factors as probe pull speed, eddy current standard material and probe type to determine impact on the mix residual noise level. Zetec's review discovered a subtle mathematical error in the EddyNet mixing algorithm. This prompted Zetec to issue the June 1, 1993, letter referred to above. Kewaunee is affected since Conan, our primary EC data analyst, and Zetec, our independent data analyst, use the EddyNet program.

Wisconsin Public Service Corporation's (WPSC) preliminary assessment of the change to the EddyNet program was that it would not result in a significant change to the EC analysis recently completed during the 1993 refueling outage, and therefore that analysis continues to demonstrate Technical Specification compliance. This determination was made based on our discussions with Zetec and the following:

- 1) The "old" EddyNet program used for data analysis during the 1993 SG examination satisfies Appendix H of the EPRI PWR Steam Generator Examination Guidelines (NP-6201, Revision 3) and has been qualified as a detection technique for outside diameter stress corrosion cracking (ODSCC). Axial ODSCC is the degradation mechanism occurring in the Kewaunee SGs.
- 2) The industry, via EPRI, has sponsored a significant amount of work to characterize the ODSCC occurring at the SG tube support plates. The results of pulled tube and model boiler tube data has found, among other things, that the axial ODSCC crack network starts at the center of the tube support plate and propagates upwards and downwards. The noise level in the mix residual algorithm potentially affects the observability of small flaw signals at the entrance to and exit from the tube support plates. The ability to detect the ODSCC within the bounds of the support plate remains unaffected. Based on the characteristics of ODSCC initiation, there is a very low probability of small flaws being present at the edges of the support plate that are not associated with a pre-existing crack network. The ability to detect ODSCC within the bounds of the support plate is not affected by the error in this mixing algorithm.
- 3) Kewaunee uses Level II and III analysts to perform the EC data analysis. Prior to performing the EC data analysis, they receive Kewaunee site-specific training and testing on our analyst guidelines. The analysts are instructed to be conservative when making a call at the tube support plates due to the presence of ODSCC. In particular, the analysts are trained to look carefully for any changes in the lissajous patterns at both the tube support plates and tube sheet crevice area. Lissajous patterns that do not produce a clear phase angle used to make the

depth based determination are classified as distorted indications (DI) and subject to further examination with the motorized rotating pancake coil (MRPC) probe.

To further support the preliminary assessment, WPSC requested Zetec to perform a limited scope reanalysis of the 1993 EC data using both the "old" (Version 21) and "new" (Version 22) of the Eddyner software.

The Zetec study consisted of independent analyses of the output from both the old and new Eddyner programs with a subsequent comparison to the 1993 outage results. A population of 100 tubes, consisting of 1400 tube support plate intersections, was selected for this comparison study. The tubes were selected to ensure a sample of previously reported indications as well as tube support intersections with no detectable defects (NDD). This allowed for comparison of existing flaw signals to monitor possible changes in the reported depth measurement and a population of reported NDD tube support plate locations for the possibility of a flaw being masked by the mix residual noise level.

All the analysis was done in accordance with the Kewaunee Plant-specific data analysis guidelines that were used during the field inspection. In this analysis of 1400 intersections:

- 1) there was very good agreement between the old and new Eddyner programs;
- 2) there were no missed indications;
- 3) the few number of deviations noted were within the variability expected of a re-analysis.

Additionally, no previously reported depth of an indication was changed to exceed the Kewaunee Technical Specification repair limit. The Zetec study concluded that the changes in the signals from indications derived from the new version of the Eddyner program versus the old version of the Eddyner program are insignificant. This confirmed our preliminary assessment that the Eddyner program change would have no consequential effect on the 1993 EC examination results.

WPSC initially committed to provide a report of our evaluation to the NRC prior to heating the reactor coolant system greater than 350°F. This commitment was revised during discussion with the NRC on June 10, to provide summary information on an expedited schedule to support the plant startup evolution.

Document Control Desk
June 10, 1993
Page 4

Additional information will be submitted to the NRC by June 21, 1993. Please contact me or a member of my staff if you have any questions or would like additional information.

Sincerely,



C. A. Schrock
Manager-Nuclear Engineering

SLB/slh

Attach.

cc - US NRC Senior Resident Inspector
US NRC, Region III