



**North
Atlantic**

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The Northeast Utilities System

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Docket No. 50-443

NYN-01056

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United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Seabrook Station
"Loose Parts Monitor Alert Level Revision"

Pursuant to Regulatory Guide 1.133 (Revision 1, May 1981), "Loose Part Detection Program for the Primary System of Light-Water-Cooled Reactors," Section C.3.a.(2)(e), North Atlantic Energy Service Corporation (North Atlantic) is hereby reporting a change to the Loose Parts Monitor alert level which occurred on June 7, 2001. Enclosure 1 contains the details of the events that precipitated the change along with a summary of the engineering evaluations to justify the change.

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Manager - Regulatory Programs, at (603) 773-7194.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.

Gene F. St. Pierre
Station Director

cc: H. J. Miller, NRC Region I Administrator
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G.T. Dentel, NRC Senior Resident Inspector

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ENCLOSURE 1 TO NYN-01056

Loose Parts Monitor Alert Level Revision

Background:

Loose Parts Monitoring System (LPMS) alert levels are determined using the following equation: $AL=(1+K)*BN$; where AL is the alert level, BN is the background noise, and K is the fraction of the background noise level by which an impact must exceed the background in order to be detected.

The alert level for each channel of the LPMS was originally determined during Startup Testing. This testing resulted in an initial K-value of 1.0 for each channel. The LPMS equipment manufacturer recommends that the K-value be set between 0.5 and 2.0. K-values greater than 2.0 could result in a loose part being undetected. Conversely, K-values that are too low can cause nuisance alarms due to flow or other background noises.

To date, the system background levels have remained relatively constant. On February 20, 2001, multiple alarms occurred. The signals originated in channels 4 (Reactor Vessel Lower Plenum) and 10 (Steam Generator C above the Tubesheet). Other channels also alarmed.

Evaluation Summary:

As a result of the alarms on February 20, 2001, Reactor Engineering commenced an evaluation of the LPMS. An audio check of the LPMS was performed several times each day. Immediate and subsequent audio checks indicated that LPMS channels had no audible "impact activity" that would have been indicative of a loose part present in the reactor coolant system.

Reactor Engineering analyzed the signals for channels 3 and 4 (Reactor Vessel Lower Plenum), and also channels 9 and 10 (Steam Generator C), using the LPMS vendor software. There was no indication of impact activity on these channels. The trend of the data did however indicate that channel 4 was moving into a region that is characteristic of "low-level rattling."

North Atlantic contracted with Framatome-ANP to evaluate the subject loose part alarms. After arrival on site Framatome connected a portable LPMS V system in parallel with the online LPMS. An aural evaluation of these channels indicated no significant impact events. On channel 4 a faint rattle could be heard sporadically which lasted for approximately 3-10 sec, with the amplitude increasing during the event. No events were audible on channel 10.

The portable LPMS V system with an alert level of 3 did not alarm on channel 4 even though the plant experienced alarms during this period. By adjusting the alert level to 2, alarms could be captured. These events were very low amplitude barely above the background and not distinct. No correlation to channel 3, the other Lower Vessel channel, could be made. Based on the low level, the weak waveform, and lack of

Loose Parts Monitor Alert Level Revision

correlation to a second channel, Framatome-ANP concluded that the alarms are not related to actual loose part activity.

Similarly, Framatome concluded that the alarms on channel 10 appeared to be related to an 8 kHz feature in the background. Frequency analysis of the channel indicated that it was operating normally with a mounted resonance above 20 kHz. The event waveforms were not characteristic of metal to metal impacts. Metal to metal impacts exhibit a short rise time and longer decay time. Events from channel 10 exhibited equal or longer rise times. Framatome concluded the events are related to fluctuations in the amplitude of the background noise, which is most likely caused by reactor coolant system flow.

As a result of their analysis, Framatome –ANP recommended adjusting the setpoint of the LPMS system upward to reduce the nuisance alarms. Specifically, they recommended following the guidance in ASME OM-12, “Loose Part Monitoring in Light-Water Reactor Power Plants,” Section 5.6, “Initial LPM Setpoints,” which recommends that the alert levels be set to 3 times the normal operating background. Based on the analysis, system performance to date, ASME OM-12, and consideration of the LPMS vendor’s recommended K-values, each LPMS channel alert level was revised to a K-value of 2.0. This value will not adversely affect the ability of the system to detect potentially damaging loose parts.