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Date: Mon, Jul 24, 2000 2:49 PM
Subject: Re: Question?

Wayne:

I, along with Stephanie and Emmett reviewed the 1997 inspection and the 2000 inspection at Indian Point on March 9. We held an exit on March 10 when we left. I gave the utility the following points in the review, with the items in parenthesis being added during the next week:

Recommendations for U-bend inspection improvement, in decreasing order of importance.

1. Use a smaller, high-frequency plus-point probe. (I talked with the manufacturer of the plus-point probe, and "negotiated" a 0.075-inch long probe that would work to 1 MHz. The utility had ordered this probe, had EPRI test it, and applied it to the steam-generators. The results were excellent, as will be discussed later.)

2. Increase the frequency of the present midrange plus-point probe. (Zetec has said that these probes can be operated as high as 500 kHz. Gary Henry of EPRI has tested the probes to 750 kHz.)

3. Use a 400 kHz-100 kHz mix to reduce the effects of od noise. (Both the utility and I have checked this out and determined that more development will be needed to get any significant improvement in this. However, it allows the possibility of analyzing the data previously acquired, including the 1997 inspection. A method that utilizes the greater phase rotation with frequency for od artifacts may give the needed improvements. Also, using more frequencies may improve this type of mixing. At least a limited amount of data should be acquired in this region using the new probe, operated over a broad frequency range (300 kHz to 1 MHz). This type of mixing will require the addition of copper and ferrite to the od of the tubing calibration standard.)

4. Analyze the 400 kHz data in addition to the 300 kHz data that the guidelines now require. (I believe that the utility is now doing this.)

5. Use the correct phase setting for the different frequencies. (The utility is now doing this for the present analysis. This is also being applied at the "look-back" of the 1997 data. An increased phase setting may be required for the best analysis of the higher frequency data.)

6. Improve the guidelines.

7. Add an emphasis on loose parts detection to the guidelines.

A more detailed write-up is given in the file labeled indianpt2.nrr that I have already sent you.

Caius

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