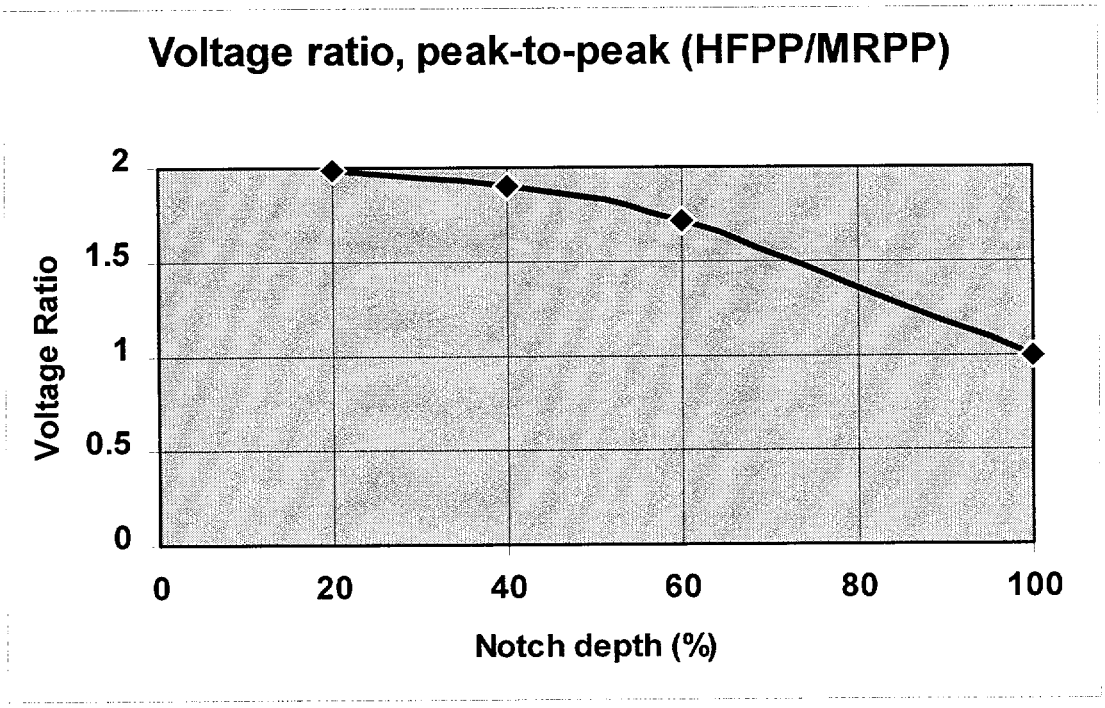
7/17/2001
Item 12

Probe and noise considerations for Indian Point2

Westinghouse has used measurements from the new, smaller high-frequency plus-point for their growth measurements and for some of the noise study comparisons.

The growth studies should use the same type of probe, since the probe size has a significant effect on the measurements. Instead they used the smaller high frequency probe operated at 400 kHz. The growth studies that I did with the midrange probe showed a definite and considerable growth in voltage amplitude but little average growth in the defect depth. Part of the lack of depth growth could be due to poor signal-to-noise measurements. Both measurements on the standard and measurements on the actual defects show a marked increase in the voltage obtained for the defects. In Figure 1 we show the voltage ratio of the high-frequency, smaller probe to the midrange probe. Since both probes are set at 20 volts on the 100% deep defect, the ratio is unity at this point. The average ratio of the three defects that had a good measurement of the maximum voltage was 1.42, which would correspond to a defect about 70% deep. This curve is for the peak-to-peak voltage. The voltage measurement ratios for the vertical component of the high-frequency probe are slightly greater, since it has a larger phase angle.



At the time that Westinghouse did the comparative noise study between the two probes, I believe that they were under the impression that they were using data from the mid-range probe. This may have contributed to some wrong conclusions about the response of the different probes. However, I believe that their conclusion that the high-frequency probe has a much better signal-to-noise than they achieved in 1997 is correct.

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Tube 2-69 and tube 2-87 have defect signals in a relatively clear part of the tube, although neither are particularly large. Tubes 2-5 and 2-72 are similar, and could possibly be detected from the C-

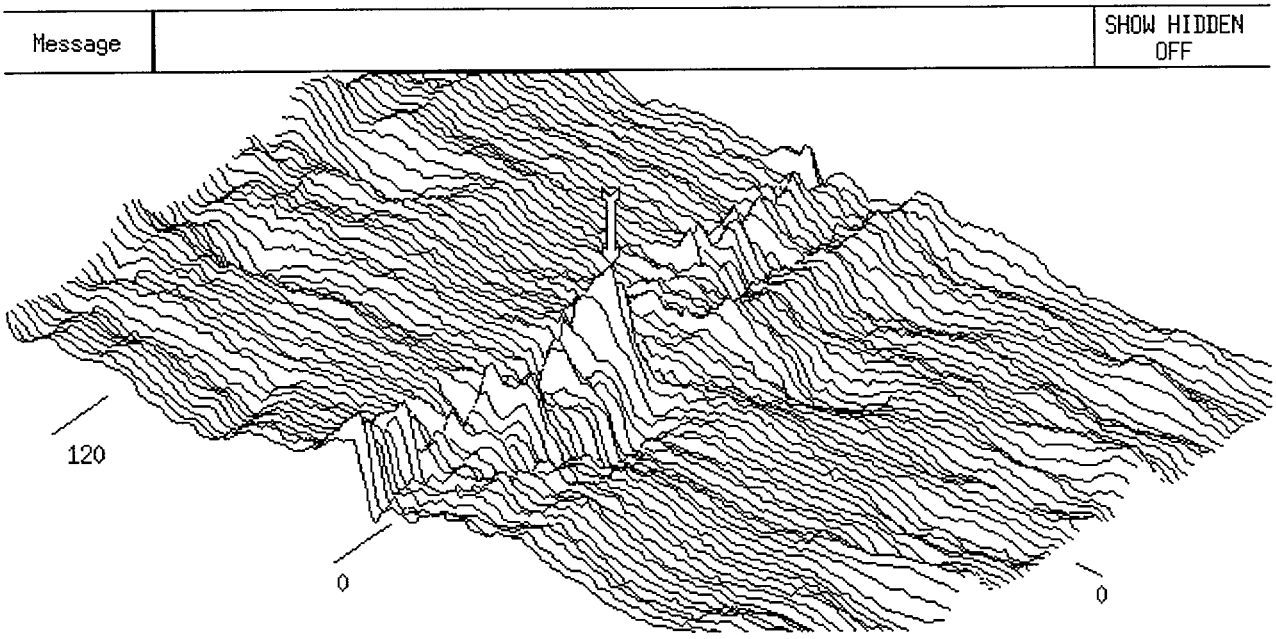

Figure 1 Tube 2-71 of SG24 in 1997 at 400 kHz, with circular average filter applied.

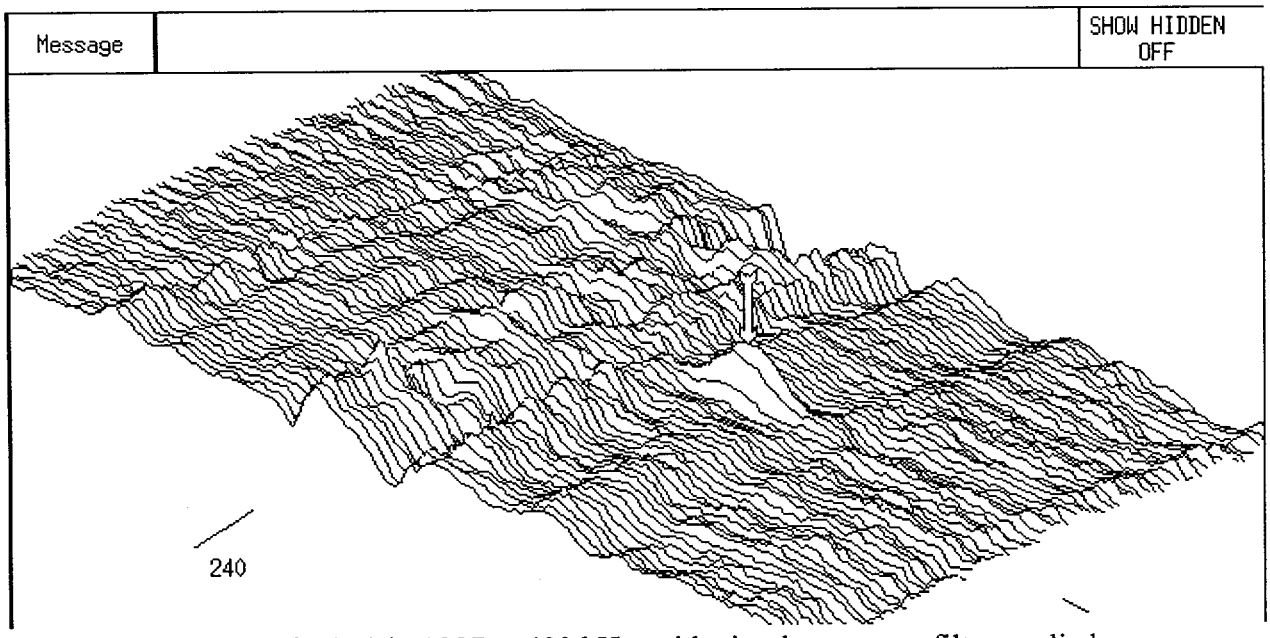

Figure 2 Tube 2-85 of SG23 in 1997 at 400 kHz, with circular average filter applied.

scan. Tube 2-71 and 2-85 need the circular average filter applied for detection.