

CHAPTER 4

PHANTOM QUALITY CONTROL

39 QUESTION: What is the purpose of the phantom quality control graphs?

ANSWER: The phantom quality control measurements ensure that the entire imaging system—including x-ray unit, processor, and film—is working properly so that you are taking diagnostic quality mammograms.

40 QUESTION: What do you mean by “diagnostic quality” mammograms?

ANSWER: These are mammograms taken under the same conditions (processing, automatic exposure) that would produce a phantom image within your QC limits. Therefore, they are not too dark or light, and they have the correct contrast. To put it a little differently, if your processor QC, your phantom background, and your density difference are all within limits, all the mammograms you take will be diagnostic quality as long as you apply any necessary corrections. These corrections include proper photocell position and different density setting for a thicker (or thinner) breast if required (see questions 64 and 69).

41 QUESTION: The *ACR Manual* tells me to take phantom images at 28 kV, but the FDA inspector told me to take phantom images at 25 kV. Which is right?

ANSWER: Take phantom images using the clinical setting for a normal 4.5 cm compressed breast according to your technique chart. This is

what the FDA inspector expects and it makes good sense for quality control.

42 QUESTION: You said to take the phantom at the kV for a 4.5 cm breast. My mammography machine automatically sets the kV. When I select “phantom” it sets a different kV than when I select “CC view” for a 4.5 cm breast.

ANSWER: Either do not use the automatic “phantom” selection for QC (use “CC view” instead), or have the service engineer reprogram the generator to match the clinical value.

43 QUESTION: What do my phantom quality control graphs mean?

ANSWER: There are four graphs for the phantom quality control: background density, density difference, mAs, and number of objects visualized.

44 QUESTION: Start with the obvious one first.

ANSWER: The graph for number of test objects is obvious. It gives us a measure of performance for types of objects the radiologist is trying to detect when reading mammograms. It is unlikely that you will see all the objects—you aren’t supposed to—but you should see at least a minimum number (see question 59). This is not a very sensitive test, but if the number of objects you see drops below the minimum or changes significantly from what you normally see, contact your physicist.