**15 PERCENT RULE FOR kVp**

**Laboratory Experiment #4**

**Procedure:**

Using 10 x 12 inch 400-speed screen cassettes, make a series of three exposure of the skull phantom in PA position using the Bucky mechanism. Use the same mA station for all exposures, if you can, and label your films. Adjust total mAs and kVp as listed below. The kVp is increased in increments of roughly 15 percent, while the mAs is cut in half each time.

Exposure #1: 10 mAs, 80 kVp

Exposure #2: 5 mAs, 92 kVp

Exposure #3: 2.5 mAs, 106 kVp

Alternate Techniques:

Exposure #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exposure #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exposure #3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Analysis:**

1. Select a small homogeneous medium-density area within the image of each film and circle it. Using a densitometer, measure the density of each point and record it. Calculate the density change ratios between #1-#2, #1-#3, and #2-#3 by dividing the smaller number into the larger.
2. Note the average density change ratio in #1. Are the radiographic images of each film comparable, within 25 percent, in their overall radiographic density? Can you see significant visible density differences on a medium-density area?
3. Does the 15 percent rule for kVp work for density control?
4. What would happen if you used the 15 percent rule in several steps to reduce kVp too far? (See Lab #2)
5. What would happen if you used the 15 percent rule in several steps to increase kVp too much? (See Lab #3)
6. Based on Questions #4 and #5, what is the *maximum* number of steps of 15 percent increase or decrease you would recommend using?