Experiment # 4:

**ORTHOPEDIC CAST AND DENSITY**

**Objective**: To demonstrate the effect of cast material on radiographic density, and to prove that density can be maintained through the use of proper formula.

**Procedure:**

We will use 24X30 cm cassette, foot phantom and a cast.

**Film one:**

Place the foot phantom in lateral position, center on the ankle and collimate the X-ray beam to the area of interest.

Kv= 45 mAs = 4 FFD=100cm

**Film two:**

Place the foot phantom in lateral position, apply an orthopedic cast ,center on the ankle and collimate the X-ray beam to the area of interest.

Kv= 45 mAs = 4 FFD=100cm

**Film three:**

Place the foot phantom in lateral position, apply an orthopedic cast ,center on the ankle and collimate the X-ray beam to the area of interest.

**Double the mAs**

Kv= 45 mAs = **8** FFD=100cm

**Film four:**

Place the foot phantom in lateral position, apply an orthopedic cast ,center on the ankle and collimate the X-ray beam to the area of interest.

**increase the Kv by 10%**

Kv= **49.5** mAs = 4 FFD=100cm

**Film five:**

Place the foot phantom in lateral position, apply an orthopedic cast ,center on the ankle and collimate the X-ray beam to the area of interest.

**Double the mAs and increase the Kv by 10%**  Kv= **49.5** mAs = **8** FFD=100cm

**Compare film 1 and 2:**

**1: optimum density and optimum contrast (good quality).**

**2:low density and high contrast (bad quality)**

**Compare film 2 and 3:**

**2:low density and high contrast (bad quality)**

**3: optimum density and optimum contrast similar to film 1 (good quality).**

**Compare film 2 and 4:**

**2:low density and high contrast (bad quality)**

**: optimum density and optimum contrast similar to film 1 (good quality) 4**

**Compare film 2 and 5:**

**2:low density and high contrast (bad quality)**

**5: high density and low contrast (bad quality)**

**So we have 2 options when there is an orthopedic cast :**

**Doubling the mAs if the cast is dry OR increase the Kv by 10% if the cast is wet. to maintain the radiographic density.**