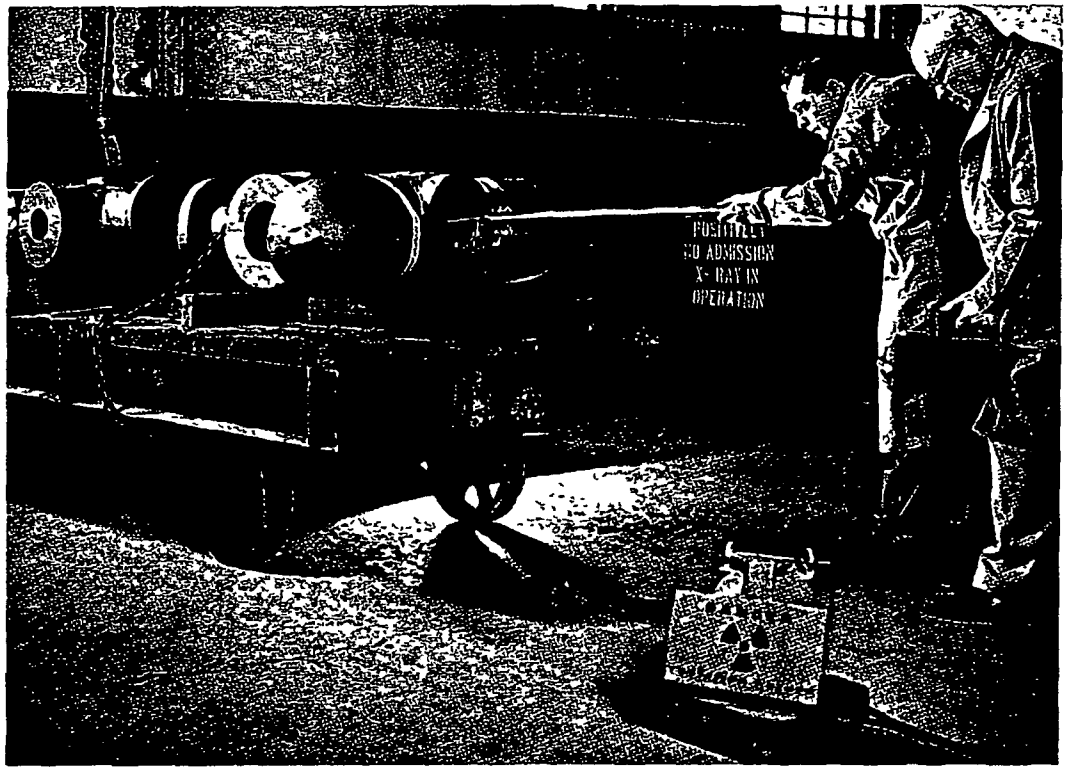

FIG 33–14 —"Pill" of radioactive cobalt-60 is placed inside newly cast pump housings Radiation exposes X-ray film strapped to outside of castings and shows up defects Aluminum rod is long enough to keep operators and radiation source safely separated Second man monitors exposure during inspection

quency radar waves to measure the electromagnetic properties of thin coatings and surface layers of material To make such tests, a wave guide or cavity oscillator is coupled to the test object, high-frequency waves are then reflected from the object, providing an indication of the surface electrical resistance and of the thickness of the nonconducting coatings

In some radar-frequency testing installations, operators have been burned internally when they passed between the object being tested and the testing device Special regulations should be formulated and enforced, and barriers should be set up to prevent operators and other workers from entering such areas Recommendations of the manufacturer of the equipment should be followed explicitly.

Radiography

Radiography uses X rays, gamma rays, or beta rays X rays are unidirectional, and their wavelengths can be varied (within certain limits) to suit the condition Gamma and beta radiography differ from X-ray radiography in that the gamma and beta rays are multidirectional and their wave lengths, being characteristic of the source, cannot be regulated Gamma rays for radiography usually are obtained from isotopes of cobalt-60, cesium-137, iridium-192 (Fig 33–14) Important pure beta-emitting sources are strontium-90, yttrium-90, technetium-99, and promethium-147

Exposures made by gamma rays usually take longer to complete than do X-ray exposures Also, in some instances, gamma exposures are inferior to X-ray exposures in