



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

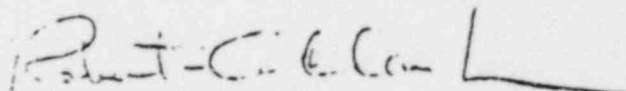
FEB 16 1978

MEMORANDUM FOR: Reactor Safeguards Licensing Branch

FROM: Robert A. Clark, Chief
Reactor Safeguards Licensing Branch, DOR

SUBJECT: PERFORMANCE OF METAL DETECTION DEVICES - REVIEW
GUIDELINES #3, REVISION 1

All licensees are required to search individuals entering the protected area for firearms. This search is normally conducted by electronic metal detection devices. Enclosed is an acceptable standardized procedure utilizing four specified test weapons. However, this is not to imply that this is the only acceptable test method that can be used to assure proper operation of the devices and that the licensee must purchase four weapons of the type listed. This procedure is designed to detect those weapons most commonly found and covers the spectrum of metal, weight, density, plating, size and shape found in those types of handguns. Other test procedures using test samples other than the type of handgun listed that can demonstrate they can detect the minimum standard of 8 oz., 1/2 lb., or 227 grams of nonferrous metal at the same detection rate for walk-through and hand-held devices as with test weapons will be acceptable.


Robert A. Clark, Chief
Reactor Safeguards Licensing Branch

Enclosure:
As stated

cc: J. R. Miller

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Performance of Metal Detection Devices

Purpose To assure that the electronic detection devices (metal detectors) are operating properly through appropriate standardized procedures.

General One method to obtain a decrease in the number of false alarms, is to have all personnel remove all metal before going through the device; that is, place all metallic items in a container and pass this container around the detector.

Responsibility The responsibility for assuring and certifying that the detection device meets the minimum detection standard rests with the using facility. The using facility should maintain a record of the calibrations required to maintain the devices in proper working order.

WALK-THROUGH DETECTION DEVICES The objective of a walk-through detection device is the automatic and reliable detection of any hand guns carried by personnel entering protected area. The subject of the search is only the person, not his hand luggage or other hand-carried items. The detection is to be done automatically at walking speed.

Performance (Calibration) Test

- a. Walk-through detection devices should be set up at a screening station and the sensitivity set to the level or setting that the manufacturer of the device certifies will cause his type of detector to pass the performance test as specified below. It will be necessary to perform the performance test on initial set up of every device. The test should be performed any time a device fails the operational test described below, each time the device is moved, adjusted, and at least quarterly.
- b. The performance test shall consist of passing the following four weapons at the center line of the detection device passageway four times for each of seven orientations and positions specified for a total of 112 tests. A full performance test should take 15 minutes or less to complete. The tester should be devoid of all practical metal including rings, wrist watches, coins, keys, belt buckles, or other metallic objects. The tester should carry each of the specified test weapons at a normal walking speed through the detection device with the gun barrel oriented in the forward, horizontal and vertical positions at the shoulder, waist, and ankle position except in the latter only the vertical orientation should be used, as shown in Figure 1. The overall detection should be at least 95 detections out of the 112 tests. Sensitivity should

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be set to achieve 95 out of 112 successive as a minimum.

- c. The test weapons used for calibration are as follows: Colt .25 Automatic, Titan .25 Automatic, General Precision Model 20 .22 LR, and CDM .22 Short.

Operational Test The objective of the operational test is to ensure that the detecting device is maintained in an operable condition.

- a. Each time the device is turned off or maintained it must be tested prior to being used. If the unit is never turned off, it must be tested at least once every seven days.
- b. The operational test should consist of passing the CDM 22 short weapon held horizontal at the waist three times through the device in the direction of traffic flow through the detector. The detector should signal the presence of the weapon on at least two of the three passes.

HAND-HELD DETECTION DEVICES Detection is indicated by a squealing sound from a loud speaker within the unit when the unit is brought into the vicinity of metal. A squeal will be heard when the unit passes over metal. A high squeal indicates a greater mass of metal is presented.

CALIBRATION PROCEDURES FOR HAND-HELD DEVICES Devices in present use should be calibrated in accordance with manufacturer's instructions.

SUGGESTED SEARCH PROCEDURES FOR THE USE OF ALL HAND-HELD DEVICES
The following procedures should be used in conducting a search using hand-held detection devices.

- a. Assure that the detection device is in proper working order.
- b. With the device approximately two to four inches from the subject, slowly pass the device over the entire body with the detection loop parallel with the body, front and back. Then pass the device slowly over the arms and legs, front, back and sides. Particular attention should be paid to waist, groin, armpit, and ankle area. With practice, a thorough search can be made in one minute. Hand-carried outer garments will be searched by hand. Bags and parcels of any size will not be searched using a hand-held weapon detection device.
- c. If unit alarms, it indicates that metal is present in a given area. Ask subject to remove any metal and search again.

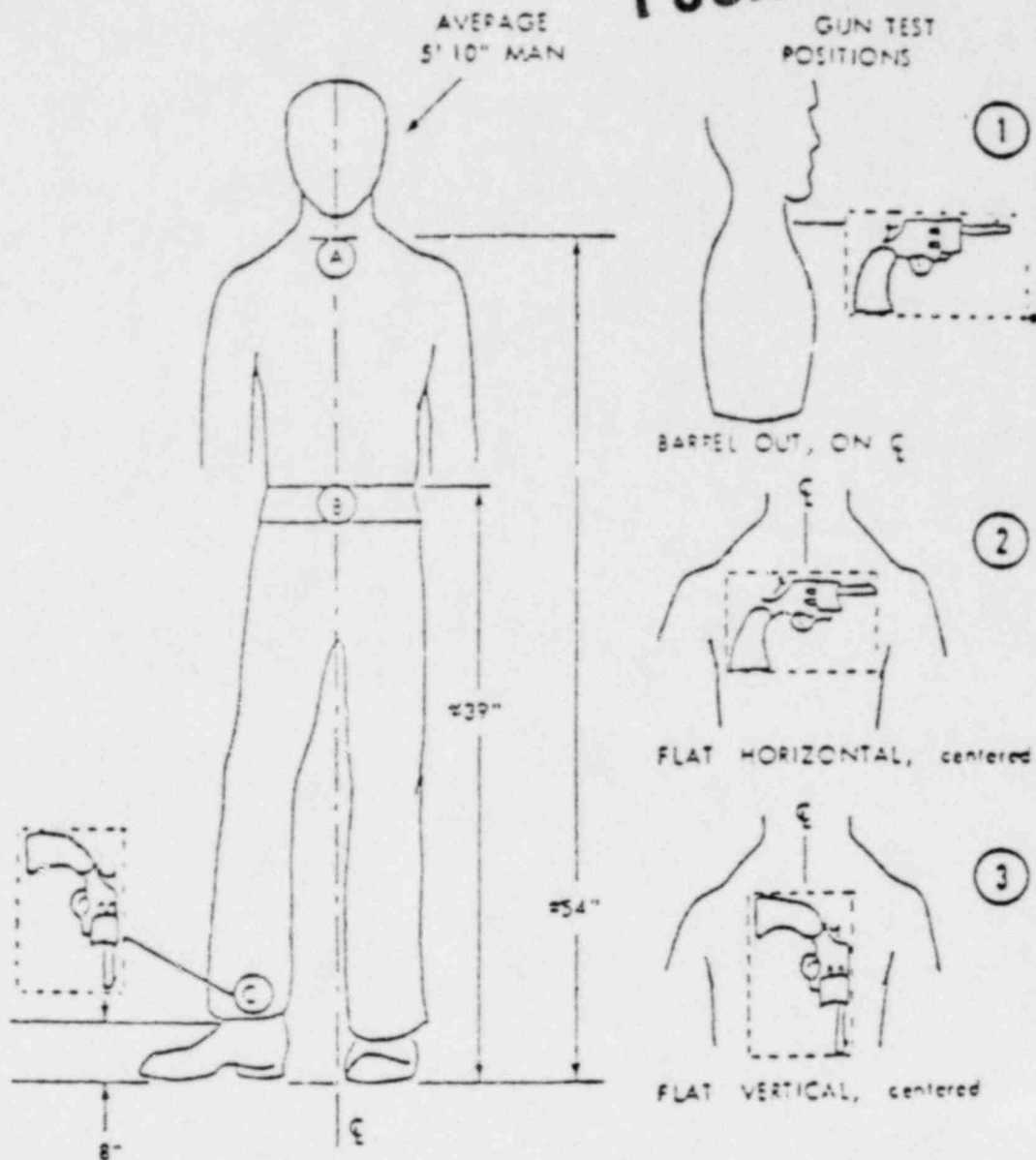
Performance Test The performance test for hand-held detectors should be conducted at the beginning of each shift: The CDM .22 short will be placed in positions 1 through 3 as shown in Figure 1. The detection

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should be at least 3 detections out of 3 tests for each position tested.

Operational Test The operational test for hand-held metal detectors is the same as the performance test.

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PLANT GUNS IN LOCATION A, B, C, AS FOLLOWS:

- Loc A: Position 1, 2, and 3 with top edge of box as shown by locating dimension.
- Loc B: Position 1, 2, and 3 with top edge of box as shown by locating dimension.
- Loc C: Position 3 with bottom edge of box as shown by locating dimension.

Figure 1