DATE:	SEPTEMBER 4, 2014
NUMBER:	C.2
SUBJECT:	RADIATION SAFETY AND PROTECTION
RELATED SECTIONS:	
IN COMPLIANCE WITH:	TITLE 10,21 AND 17; Code of Federal Regulations and Standards for Protection against Radiation.

PURPOSE

To ensure proper safety precautions are followed when operating body scan devices.

POLICY

The San Diego County Sheriff's Department is dedicated to all components of workplace safety. This written program establishes procedures to safeguard the health of Sheriff's employees, volunteers, visitors, and inmates in the vicinity of a body scan device and to ensure compliance with all applicable federal and state regulations. Each facility with an x-ray body scan device will ensure that radiation safety procedures and guidelines are followed to ensure the safe operation of the unit(s).

REFERENCE:
Title 10 (10 CFR Part 20) – Code of Federal Regulations, Standards for Protection Against Radiation;
Title 21 (CFR 1020.40) – Code of Federal Regulations, Chapter 1, Subchapter J (Radiological Health);
Title 17 (17 CCR)- California Code of Regulations, Public Health Chapter 5, Subchapters 4 and 4.5;
Canon/SecurePASS Operator Maintenance Manual.

Definitions:

Body Scan: X-ray technology used to produce an image revealing the presence of contraband concealed on or inside of a subject.

Body Scanner: A stationary system for obtaining full height radiographic images of a person to detect any kind of weapons, explosives, drugs, and other contraband either concealed under clothing, swallowed or hidden in anatomical cavities of the human body without causing harm to the person being scanned (SecurePASS System)

X-Ray (x-radiation): A form of electromagnetic radiation similar to light but of shorter wavelength and capable of penetrating solids and of ionizing gases.

Radiation: Process in which energetic particles or waves travel through a medium or space. X-radiation is an ionizing radiation.

Radiation Survey: Measurement of the X-radiation equivalent dose rate at the external surfaces of the body scanner, the personal work station(s), the boundaries of the working zone, and in adjacent rooms if applicable.

Exposure: A term defining the amount of ionizing radiation that strikes living or inanimate material.

Dose: The quantity of radiation or energy absorbed.

PROCEDURE

I. The lieutenant assigned to the Detentions Support Division shall serve as the Radiation Safety Officer (RSO) for the Detention Services Bureau.

A. The RSO will maintain the Radiation Safety and Protection Program and coordinate the safe operation of x-ray based body scan devices in compliance with applicable State and Federal regulations.

B. The RSO will ensure all new or relocated radiation sourcing equipment operated within the Detention Services Bureau is registered and annual fees are paid to the Radiologic Health Branch of the California Department of Public Health (form RH2261).

C. The RSO will ensure all radiation sourcing equipment operated within the Detention Services Bureau is serviced and maintained in compliance with all applicable State and Federal requirements.

D. The RSO will ensure the annual fees for each body scan device is paid to the Radiologic Health Branch of the California Department of Public Health prior to the effective date of the license.

Title 17 of the California Code of Regulations, Section 30231 requires above payment and mandates that failure to do so requires usage of the scanning devices to immediately cease until all fees have been paid.

II. The administrative sergeant at each facility operating a body scanner will serve as the facility section manager and will be responsible for the following:

A. Report any movement or relocation of a body scan device to the RSO.

B. Notify the RSO and the Virtual Imaging/Canon representative upon becoming aware of any maintenance or safety issues related to the body scan device.

C. Will ensure all radiation sourcing equipment operated within his/her respective facility is serviced and maintained in compliance with all applicable State and Federal requirements.

D. Report new X-ray emitting equipment to the RSO prior to its arrival at the facility.

E. Ensure only employees who have successfully completed proper training are assigned to operate the body scanner.

F. Ensure all parts removal and installation is completed by a qualified service engineer of the Virtual Imaging and/or designated sub-contractor.

G. Ensure all survey, service, inspection and instrument calibration records are retained for the lifetime of the respective body scan device.

III. Body Scanner Operation

A. Only employees who have successfully completed training will operate the body scanner equipment.

B. The operator's manual for each device shall not be removed from the designated work station for each unit.

C. Pregnant inmates will not be scanned with a body scanner.

D. During operation of the body scanner, unauthorized persons are not allowed within the working zone (approximately 2 meters out from each side of the base of the unit). The working zone will be clearly marked with black dots on the floor, around the unit. The device shall be considered operational while the red light on the unit is on.

E. Each body scan device shall be marked with the following:

Caution! Dangerous Voltage
Caution! Radiation Danger

IV. Training

A. Body scanner operator training will consist of the following subject matter:

1. Design of the scanner
2. Purpose of basic components
3. Principals of scanner operation
4. Radiation and scanner operation safety principles
5. X-ray history, X-ray tube, penetration & absorption, X-ray scanner features, limitations of X-rays, and prohibited items
6. Control of scanner device
7. Principles of investigation of digital images
8. Malfunction diagnostics
9. Health and safety
10. Practice and knowledge testing

The training staff at each facility will be responsible for training and certifying deputies to operate the equipment.

V. SecurePass Body Scanner Safety Features

A. Safety features are built into the device which minimize the exposure doses to which the personnel and persons being scanned could be exposed:

1. X-ray generator is enclosed in the X-ray protection case.
2. System of slit diaphragms in the X-ray protection case provides a narrow fan shaped X-radiation beam.
3. X-ray protection shutter shuts off output of the X-radiation from the generator.

4. Permanently connected additional X-ray filter.
5. High-sensitivity digital X-ray converter.
6. Built in dosimeter for monitoring stability of the X-ray generator.
7. STOP Button (emergency stop).
8. Red Signal Lantern – when on indicates machine is in operation.

B. Body Scanner Malfunction

In the event of a scanner malfunction, the X-ray protection shutter shuts off X-radiation output from the generator. If the X-ray protection shutter fails, high voltage to the X-ray tube shuts off. The SecurePASS software tests the system when it is turned on and during the scanning process. Error messages are displayed on the operator's screen.

In the event any of the safety features become inoperable, the systems operator will shut down the body scan device and immediately notify his/her supervisor.

VI. Servicing and Survey of Body Scanners

To ensure Virtual Imaging - SecurePASS X-ray based body scan devices are operating within manufacturer specifications, a calibration, maintenance, and service shall be performed twice a year by a service engineer as authorized by Virtual Imaging Inc.

Annual Radiation Survey

A radiation survey, that checks to ensure no radiation exposure to operators, shall be performed on each body scanner device:

A. At intervals not exceeding more than one (1) year.

B. Upon installation of a new unit.

C. Upon relocation of an existing unit.

D. Immediately following any service that could potentially increase the systems output.

VII. Radiation Doses

Safety of the Persons Being Scanned

The radiation dose to which an arrestee or inmate being scanned is exposed to per scanning session does/shall not exceed .25 uSv. The SecurPASS scanner allows the same person to be scanned up to 1,000 times per year which equates to three scans per day without exceeding existing dose regulations.

Operator Safety

Within an unshielded perimeter of approximately two (2) meters from the scanner the maximum dose rate of the scattered radiation does not exceed 10 uSv per hour.

Bystander Safety

For incidental bystanders the level of exposure per day and year is negligibly low. Based on vendor recommendations the scanning area zone approximately two (2) meters out from each side of the device shall be clearly marked on the floor around each unit.

VIII. Daily System Check

During each shift, any employee assigned to operate a body scan device will conduct the following system check prior to utilizing the device:

A. Inspect the device for obvious damage.

B. Ensure all access panels are securely in place.

C. Ensure all external cable connections are secure.

D. If the system is not already on, turn it on.

E. Verify that the "Power On" light is lighted.

F. Record the systems check in the Jail Information Management System.

If any damage or malfunction is found during the systems check, the employee shall power off the unit and notify their supervisor and the section manager. The unit will be placed "Out of Service" until appropriate repairs have been completed.

Emergency Procedures

Should an emergency situation occur, the body scanner device shall be powered off and appropriate facility personnel and the department RSO will be notified.

If the control panel is not functioning the main power breaker for the system must be shut off and/or the unit should be unplugged immediately.

If a situation occurs in which staff suspect possible exposure to excessive levels of radiation while operating the system, they should immediately advise their supervisor and seek medical attention. If this occurs, the facility commander or designee will immediately discontinue use of the body scan device.

Upon completion of needed repairs by an authorized service engineer, a Radiation Survey must be conducted on the identified body scan device. The body scan device can only be cleared to return to normal operation if and when it is determined to be safe to do so by the authorized service engineer.