



Saint Francis Hospital Center

MICHAEL D. VOLLMER
VICE PRESIDENT
PROFESSIONAL SERVICES

Mr. George McCann
Materials Licensing Section
USNRC Region III
799 Roosevelt Rd
Glen Ellyn Il. 60137

10/22/87

Dear Mr. McCann;

Subject: Reply to your letter dated 9/14/87 with enclosures.

Control Number: 82456

This letter is in response to your letter and our application amendment on NRC Licence 13-02128-02. We hereby supply the following information as you requested.

1. SERVICE ACTIVITIES TO BE PERFORMED

- a. Mr. Pegg will not (a) install, relocate or remove the source drawer or remove a teletherapy sealed source or a teletherapy unit that contains a sealed source or (b) maintain, adjust or repair the source drawer, the shutter or other mechanism of a teletherapy unit that could expose the source, reduce the shielding around the source, or result in increased radiation levels.
- b. Five year inspections will be performed by NRC licensed personnel.
- c. A example of the requested form is attached to this letter that includes the seven items referenced in your letter.

2. Training

We will specifically EXCLUDE any service on the interior of the teletherapy head or any other procedure involving the restrictions involved in paragraph 1. Mr Pegg has not had any experience in the last five years involving interior repair of the teletherapy head except as a interested observer during the source exchanges and five year inspections. Since we have excluded this repair, we have no other information to submit.

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3. Radiation Safety Program

- a. The requested copies are attached. The health physics staff will audit the performance at least on a semi-annual basis, if service is performed with that frequency.
(Note: in most instances the medical physics staff will be present during service.)
- b. Upon completion of service on the cobalt unit, the medical physics staff will do the necessary checks dependant upon what service was performed. When necessary the output will be checked as will the interlocks, emergency off, light vs radiation field, warning lights and timer. All necessary checks will be made prior to the use of the unit to treat patients.
- c. Our model of teletherapy machine is no longer being produced so there will be no future production changes. All manufacture supplied modifications or changes in service procedures will be attached to our existing set of operator and service manuals for future reference. We do possess the operator and service manuals that pertain to our model of teletherapy equipment. In addition our service and maintenance operations will meet the current ANSI standards.

4. Radiation Detection Instrumentation and personnel Monitoring

In addition to his assigned film badge, Mr. Pegg will be supplied with a digital pocket dosimeter with an audible chirper with variable alarm levels, and have available a calibrated survey instrument whenever performing service work upon our teletherapy unit.

5. Operating and Emergency Procedures

The requested copy is attached. Mr Pegg will at no time be in the treatment room with the source in the exposed position. All surveys will be performed by the Radiation Safety Officer when needed. If you have any further questions, please feel free to contact Berry L. Stewart, RSO at (317) 783-8171.

Sincerely,

Michael D. Vollmer

Michael D. Vollmer
Vice President,
Professional Services

Enclosures

POLICY FOR SUPERVISION OF EXTERNAL BEAM UNITS

All external beam units used for therapeutic purposes shall be under the supervision of a radiotherapist.

Thomas L. Jamison-----

Thomas L. Jamison
Admin. Dir. of Radiology

Michael D. Vollmer-----

Michael D. Vollmer
Vice President

OPERATING INSTRUCTIONS FOR THE C/9 COBALT-60 TELETHERAPY UNIT

Turn main switch on. The PILOT light, the green SHUTTER Indicator and the green light over the treatment room door will be illuminated.

TREATMENT TIMER KIT OPERATING INSTRUCTIONS:

This kit includes (1) treatment timer, (1) backup timer, and (1) elapsed time totalizer.

- 1). The backup timer is designed to terminate the treatment in the event of a failure of the main treatment timer. The backup timer must be set to a slightly longer time than the main treatment timer or it can be preset to limit the maximum exposure to a safe level, depending on source output. It can be reset as the source decays.

The backup timer is set to tenths of a minute by rotating the (2) thumb wheels located on the left side of the front face.

- 2). Set the treatment timer for the desired treatment time by rotating the thumb wheel selector switches on the front of the treatment timer. Press the reset switch located directly above the key switch to enable timer. Red enable light on the front of the timer will illuminate. Turn and hold the shutter lock key counterclockwise. When the switch is turned counterclockwise, the elapsed time indicator is reset to zero and the selected treatment program is initiated, after approximately 1 1/2 seconds. (Note the backup timer automatically resets each time the key switch is turned).

During this period, both the red and green shutter indicator lights will be illuminated. When the shutter opens, the treatment timer, and the backup timer, and the totalizer each start from zero, and the green light will extinguish. Release the shutter lock key. The radiation exposure terminates when the selected treatment time has elapsed and the red enable light will go off. Exposure termination is indicated when the red shutter indicator extinguishes and only the green shutter illuminates. Both shutter indicators will be illuminated during the shutter transit time to off (closed).

CAUTION

If the green shutter indicator light does not illuminate after the set time has elapsed and the red shutter indicator light remains on, there is a possible malfunction in the machine. Immediately press the Emergency Bar. This initiates the closing of the shutter, which will then extinguish the red shutter indicator light and leave just the green shutter indicator illuminated. If the red light still remains illuminated, follow emergency procedure posted above control console.

If the green shutter indicator and the red shutter indicator remain on after the shutter lock key is turned, the shutter may be obstructed at some point in its rotation. This may be caused if the shutter locking bar is engaged as a safety precaution. If the shutter locking bar is in position, it should be disengaged by a properly authorized person.

Thomas L. Jamison

Thomas L. Jamison
Admin. Dir. of Radiology

Michael D. Vollmer

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Vice President

RD-3

RD-4

RD-5

EMERGENCY PROCEDURES COBALT THERAPY UNIT

For emergency termination of treatment before the preset treatment time has elapsed OR IF THE BEAM DOES NOT TURN "OFF" AFTER THE NORMAL EXPOSURE CYCLE HAS BEEN COMPLETED.


- (1). Press the emergency bar on the control unit. If the green light (source closed indicator) does not come on, press bar again and hold until red light goes out.

If the green light does not come on:

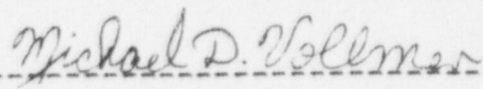
- (2). Instruct the patient if ambulatory to get off of the couch and leave the room.
- (3). If the patient is not ambulatory remove patient from the treatment room; grasp rear handle of table (handle releases floor brakes) and pull until patient moves out of beam; wheel patient out of treatment room.
- (4). Close and lock door or post a guard to prevent unauthorized entry.
- (5). Notify Dr. E. Sayoc or Radiation Safety Officer, and call Atom Therapy Service.

WARNING:

AVOID DIRECT EXPOSURE TO THE BEAM. DO NOT REMAIN IN THE TREATMENT ROOM LONGER THAN ABSOLUTELY NECESSARY WHILE BEAM IS ON.



Thomas L. Jamison
Admin. Dir. of Radiology



Michael D. Vollmer
Vice President

SCHEDULED TESTS - COBALT-60 TELETHERAPY UNIT

Monthly Spot Checks

Spot-check measurements required by the NRC shall be performed at intervals not to exceed one month. These shall include determination of:

- (1). Timer accuracy
- (2). Congruence between the radiation field and the field indicated by the light beam localizing device.
- (3). The accuracy of distance measuring devices for treating humans.
- (4). The exposure rate, dose rate, or a quantity related in a known manner to these rates for one typical set of operating conditions; and
- (5). The difference between the measurement made and the anticipated output, expressed as a percental of the anticipated output (ie., the value obtained at least full calibration corrected mathematically for physical decay.

Leak Tests

At six month intervals the accessible surfaces of the Collimator of the Cobalt unit shall be wiped with filter paper with the source in the "off" position. In a low background count area the paper will be surveyed for transferred contamination. Instruments sufficiently sensitive to detect .05 microcuries of radioactivity will be used for the measurements. The leak test shall be performed by a qualified expert who meets the training and experience criteria of the Nuclear Regulatory Commission.

Cobalt-60 Teletherapy Unit Full Calibration (Annual)

Full calibration measurements shall be performed on the teletherapy unit at intervals not exceeding one year, and after replacement or major repair of the source exposure assembly; full calibration shall include determination of:

- (1). The exposure rate or dose rate to an accuracy within ± 3 percent for the range of field sizes and for the range of distances (or for the axis distance) used in radiation therapy;
- (2). The congruence between the radiation field and the field indicated by the light beam localizing device.
- (3). The uniformity of the radiation field and its dependence upon the orientation of the useful beam;
- (4). Timer accuracy, and
- (5). The accuracy of all distance measuring devices used for treating humans.

Physical Decay Corrections

The exposure rate or dose rate values shall be corrected mathematically for physical decay for intervals not exceeding one month and shall be performed by a qualified individual.

Interlock Checks

The interlocks on the entrance doors to the teletherapy room will be tested for proper operation at least once every six months. Records of test results shall be maintained for inspection.

In the event of a malfunction of any door interlock, the teletherapy machine control shall be locked in the off condition and not used, except as may be necessary to the repair or replacement of the interlock system, until the interlock system is shown to be functioning properly.

THE RADIATION SAFETY OFFICER (RSO) AND ASSISTANT RSO

A. Authority.

1. The RSO and Assistant RSO derives their authority from the Radiation Safety Committee.

B. Responsibilities.

1. To disseminate information concerning radiation safety and health physics. To initiate programs for education of authorized and individual users of radioactive materials, and users of radiation. *
2. To provide consultation services on all aspects of radiation protection. *
3. To review all proposals for radionuclide and radiation usage. *
4. To oversee the ordering, receiving, storing, processing and dispensing of all radionuclides and maintain records pertinent thereto.
5. To oversee the maintenance of personnel radiation exposure records and provide personnel monitoring devices.
6. To perform periodic and special radiation surveys and monitoring of all radionuclide and radiation facilities, and to keep records of such. *
7. To inspect facilities and equipment to be used in conjunction with radionuclides and/or radiation and to ensure appropriate radiation safety features. *
8. To approve construction and remodeling of facilities intended for radionuclide and/or radiation use. *
9. To suspend immediately any operation involving a significant radiation hazard or violation of appropriate Federal, State or Hospital regulation.
10. To supervise the disposal of radioactive waste and to keep records of such. *
11. To obtain and oversee the Nuclear Regulatory Commission Licenses and State Board of Health regulations for Saint Francis Hospital Center.

* The Assistant RSO has authority only in Nuclear Medicine concerning these items.