

July 9, 1987

John Glenn, Ph.D. Nuclear Materials Safety Section B NRC, Region 1 631 Park Avenue King of Prussia, PA 19406

Dear Dr. Glenn:

We would like to amend our teletherapy licerse #44-10187-02 to include approval for an in-house service person to perform all repairs on our AECL theratron 780 cobalt unit, except for installation, relocation, or removal of teletherapy units, source exchange, 5 year inspections and repair on the source drawer. Doug Hoes has an Associates degree in engineering technology, 18 years of experience repairing cobalt units and linear accelerators, and has successfully completed manufacturer's training programs for three treatment machines. Enclosed is a certificate documenting his training on our Theratron 780 treatment unit and a description of the contents of that particular course. Also a check for \$150.00 for the amendment of this license is enclosed.

> Sincerely, Wayne L Thompson Wayne L Thompson Medical Physics



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> (802) 656-2345 Barlington, Vermont 05401 A Vermont Health Foundation Company ♥



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RECEIVED-RECION 1

ATOMIC ENERGY OF CANADA LIMITED L'ÉNERGIE ATOMIQUE DU CANADA, LIMITÉE COMMERCIAL PRODUCTS PRODUITS COMMERCIAUX H. Douglas Hoes HAS SUCCESSFULLY COMPLETED CERTIFIES THAT A COMPLETE ET REUSSI ATTESTE QUE Theratron 780 Maintenance Course 1984 May 4 Dated on Date du James Malkoski 107587 TECHNICAL TRAINING OFFICER AGENT, FORMATION TECHNIQUE

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# Theratron 780 and Eldorado 78

# Maintenance Training



# **Course Description**

The Theratron 780 and Eldorado 78 Maintenance Course offered to customers is primarily a "hands-on" training course designed to provide sufficient background knowledge and supervised operation of the units to enable participants to operate the machines safely and properly and to carry out required first- and second-line maintenance procedures. The course consists of four units which cover four training days.

The first training unit is designed to familiarize participants with machine specifications and source drawer operation. This unit includes the discussions on radiation safety pertaining to safe operation of the Theratron 780 and Eldorado 78 and the emergency procedures to be carried out if necessary. Also included is a review of available special tools and accessories.

The second training unit covers the treatment couch system operation and maintenance. Theory of operation, assembly identification, and operator and maintenance procedures are included in this unit. The third unit is "hands-on" training during which the mechanical checks and adjustments are reviewed. Following the discussion and review, supervised "hands-on" operation will be carried out. All procedures pertinent to safe operation of the units and to first- and secondline maintenance will be covered.

The fourth training unit is designed to cover unit electronics and electrical drive systems. Theory of operation and schematic drawings are covered as well as the AECL drawing and parts identification system. Checks and adjustments of the various speed and drive control systems will be carried out and required test equipment will be discussed and used.

At the end of the training course each participant will have reviewed and discussed system design, radiation and industrial safety, manuals and schematics, and the AECL drawing system. Each participant will have properly operated the units in all treatment modes, carried out checks and adjustments required during firstand second-line maintenance, and carried out selected representative mechanical and electrical troubleshooting procedures.

# Theratron 780 and Eldorado 78

# **Course Outline**

# UNIT 1 - SYSTEM DESIGN

#### 1. Machine Specifications

- Mainframe
- Gantry

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- Treatment head
- Console
- Couch
- Hand control

#### 2. Source Operation

- Pneumatic system
- Source drawer

#### 3. Isocentricity

- Unit isocentricity
- Collimator isocentricity
- Couch isocentricity

#### 4. Optical System

- Field lamp
- ODI

## 5. Radiation Safety

- Biological effects
- Radiation protection
- Protection against radiation
- Radiation detection
- Detection and personnel monitoring

#### 6. T780 Accessories

- Unit mounted
- Stretcher mounted

# UNIT 2 - COUCH DESIGN

- 1. Couch Design and Operation
  - Major assemblies
  - Couch motions
  - Theory of operation

#### 2. Couch Maintenance

- Mechanical maintenance procedures
- Electrical checks and adjustments

#### UNIT 3 — MECHANICAL SYSTEM

- 1. Rotational Isocentricity
  - Central axis
  - Arm rotation
- Source-to-axis Distance

   Establish SAD
- 3. Collimator Checks
  - Collimator X and Y
     Collimator rotation
- 4. Field Lamp
  - Checks and adjustments
- 5. Optical Distance Indicator — Checks and adjustments
- Couch Isocentricity

   Checks and adjustments
- Drive Systems

   Checks and adjustments

#### UNIT 4 — ELECTRONICS SYSTEM

#### 1. Power Distribution

- Theory of operation
- Checks and adjustments
- Circuit diagrams

#### 2. Unit Console

- Theory of operation
- Checks and adjustments
- Circuit diagrams

#### 3. Unit Hand Control

- Theory of operation
- Checks and adjustments
- Circuit diagrams

## 4. Motion Control Cardfile

- Theory of operation
- Checks and adjustments
- -- Circuit diagrams

## 5. Arm Rotation Control

- Theory of operation
- Checks and adjustments
- Circuit diagrams

## 6. Collimator Drive Control

- Theory of operation
- Checks and adjustments
- Circuit diagrams

## 7. Collimator Readout System

- Theory of operation
- Checks and adjustments
- Circuit drawings.

#### 8. Drawing System and Parts Identification

- Organization
- Conventions
- Ordering



03 000 509 .BETWEEN: William O. Miller, Chief License Fee Management Branch 02300 Office of Administration 3/91 ÷ John E. Glenn, Chief Nuclear Materials Section 8 19 9/23 Division of Engineering and Technical Programs LICENSE FEE TRANSMITTAL REGION Α. 1. APPLICATION ATTACHED Applicant/Licensee: Medical Center Hospilat of Vermont Application Dated: 107587 Control No .: -10187-02 License No.: 2. FEE ATTACHED Amount: \$15000 Check No .: 351979 3. COMMENTS signed M. Weisenberger Date 7-25 8. LICENSE FEE MANAGEMENT BRANCH \$ 230 1. Fee Category and Amount: 7A 2. Correct Fee Paid. Application may be processed for: Amendment Renewal. License Signed Deter 9/2/87 **REGION I FORM 213** (MARCH 1983)