

TomoTherapy[®] Hi·Art[®] System

Customer Technical Training Outline

Description:

The training covers a basic understanding of the Hi·Art[®] system such as the system network and communication, system operation, and system components. The session also includes the service tools training and troubleshooting method for the Hi·Art system.

Course Benefits:

At the completion of this course you will be able to:

1. Explain the functional operation of the Hi·Art system.
2. Demonstrate operation of Hi·Art system.
3. Troubleshoot and diagnose problems with assistance from the Customer Support Center.
4. Replace and calibrate system components.
5. Use Customer Service Tools CD (2-240-10002 C) for troubleshooting purposes.

Course Details:

Course Description: Customer Technical Training, Level 1

Part Number: 9-906-61493

Price: \$9500*

Duration: Ten business days

General Information:

Prerequisites:

1. Ability to demonstrate a working knowledge and good understanding of PC service and Windows 2000/XP Operating System.
2. A good knowledge of X-Ray and radiation theory.
3. Participants must fill out training registration form and return it to TomoTherapy Incorporated two weeks before the class begins.

Hardware required:

1. Laptop with Windows 2000/XP
2. Cat5 (or better) Ethernet Cable with RJ-45 Connectors

Course Outline:

1. TomoTherapy Incorporated Company Overview

2. Hi-Art Overview

- 2.1 Hi-Art System Architecture
- 2.2 Basic Networking
- 2.3 General Electrical Safety and Radiation Safety Procedure

3. Start Up & Shut Down of the Hi-Art System®

- 3.1 Machine Start Up
- 3.2 Machine Shutdown
- 3.3 Components (PDU, power control panel, etc)
- 3.4 Water Temperature Location and Troubleshooting
- 3.5 Emergency off controls

4. RDS (Radiation Delivery Subsystem) Overview:

- 4.1 Components Overview
- 4.2 Interlocks Subsystem Theory of Operation and Indicators
- 4.3 Water Flow Sensors Subsystem Theory of Operation and Indicators
- 4.4 OBC, STC, DRS Communications
- 4.5 On-Board Controller (OBC)
- 4.6 Position Trigger Modulator Board (PTM)
- 4.7 Tick/Home & Cal Sensors
- 4.8 Quadrant Sensors
- 4.9 Stationary Controller (STC)
- 4.10 Data Receiver Server (DRS)
- 4.11 Detector and Data Acquisition System (DAS)
- 4.12 Procedure Initialization
- 4.13 Rotation and Beam On
- 4.14 "Hands-On" Lab Time

5. Basic System Communications

- 5.1 Network and Communication
- 5.2 DRS, OBC, and STC Overview

6. Planning Station, Database Server, and Operator Station

- 6.1 Planning Station Overview
- 6.2 Optimizer and Database Service Overview

7. Couch Overview

- 7.1 Couch Electronic
 - 7.1.1 Position sensor (Evaluation and Translation)
 - 7.1.2 Horizontal drive
 - 7.1.3 Hydraulic pump
 - 7.1.4 Couch interconnection
- 7.2 Couch Operation
- 7.3 Couch Engineering Software
- 7.4 Manually Retract Couch In and Out
- 7.5 Manually Lower Couch
- 7.6 Couch Limitations

8. Power Distribution Unit and Status Control

- 8.1 Mode switch
 - 8.1.1 Program
 - 8.1.2 Image
 - 8.1.3 Treat
- 8.2 Start/Stop Button
- 8.3 Emergency Stop
- 8.4 PDU Theory and Operation
- 8.5 Signal Routing for All E-stops & PDU Control
- 8.6 PDU Power On and Other Indicators
- 8.7 PDU Control Panel and Switch Settings
- 8.8 Facility E-stop and Gantry E-stop
- 8.9 STC E-stop Indicator Location

9. LINAC and Solid State Modulator

- 9.1 Difference Between a Line Modulator and the SSM
- 9.2 Operation of the Linac, SSM, Injector Assembly and AFC
- 9.3 Interconnection
- 9.4 Injector Assembly
- 9.5 Automatic Frequency Controller (AFC)
- 9.6 Wave Guides and SF6
- 9.7 CAT_N_GUN, SF6 and Magnetron Over Temperature Interlocks
- 9.8 Linac Modulator Interface Board (LMIB)
- 9.9 SSM Test Utility Operation to Turn on Beam, Troubleshoot the System, and Perform Waveform Analysis of the System
- 9.10 Alignment of the AFC, Injector Assembly and LMIB

10. Service Tools

10.1 Log Viewer:

- 10.1.1 Locate log and data files on each station (DRS, Planning Station, Operator's Station, Database Server)
- 10.1.2 Log and data files evaluation
- 10.1.3 Type and data files in each location
- 10.1.4 How to use and review log files from TomoTherapy Log Viewer
- 10.1.5 Types of error
- 10.1.6 How to identify entry time
- 10.1.7 How log files associate to MVCT (Tomo Image)/Treatment
- 10.1.8 How to copy and send log files

10.2 FileFetcher:

- 10.2.1 How to use the FileFetcher to FTP our log data files.

10.3 SSM Utility

- 10.3.1 Test the RDS (Radiation Delivery Subsystem), including SSM, Magnetron, High Voltage Power Supply, Wave Guide, Gun Board, and LINAC
- 10.3.2 Tuning the AFC (Automatic Frequency Control)

10.4 Interlock:

- 10.4.1 Interlock overview on the Hi-Art system
- 10.4.2 Troubleshooting method

10.5 RUSpeed:

- 10.5.1 Procedure and overview

10.6 AMCON Software

- 10.6.1 How to use the diagnostic tool for trouble shooting modulator and RDS chain

10.7 Task Selector

- 10.7.1 How to use Task Selector tool

11. AFC (Automatic Frequency Control)

- 11.1 Theory and Operation
- 11.2 Focus On Tuning Procedure

12. Tick Fence Data and Trouble Shooting Procedure

- 12.1 Retrieve and Analyze Tick Fence Data Using Procedure.
- 12.2 Tick/Home Calibration Lab

13. MLC (Multi-Leaf Collimator)

- 13.1 MLC Functionality
- 13.2 Lab Time and Troubleshooting

14. Jaw Functionality

15. Data Acquisition Subsystem Overview

- 15.1 DAS Functionality and Troubleshooting
- 15.2 Hot Links
- 15.3 Auxiliary Input Board

16. Basic Maintenance for First Line Support Engineer Only

- 16.1 Planned Maintenance Guide
- 16.2 Post Process Checkout Procedure

17. TCS (Temperature Control Subsystem)

- 17.1 Temperature Control Subsystem Operation
- 17.2 Temperature Controller Setup and Troubleshooting
- 17.3 Planned Maintenance
- 17.4 Electrical Schematic and Diagrams
- 17.5 Perform Water Filling and De-bubbling Procedure for Troubleshooting and Planned Maintenance (PM)

18 Planned Maintenance (PM) Schedule:

- 18.1 Weekly
- 18.2 Monthly
- 18.3 Quarterly
- 18.4 Semi-Annual
- 18.5 Annual

Participants will receive:

1. Customer Training Manual Folder or CD
2. Preliminary Data Manual (Schematics)
3. Lab Guide (Manufacturing Document, Service Bulletin or Field Replacement Unit Document)
 - 3.1 AFC Turning Procedure
 - 3.2 Gantry Calibration
 - 3.3 Couch Calibration
4. TomoTherapy Service Guide
5. TomoTherapy Customer Login Account
6. TomoTherapy Trouble Shooting Guide

* Contact TomoTherapy Incorporated for more information

Note: For more information, please contact our Customer Service Department:

TomoTherapy Incorporated

Customer Support Dept.

1240 Deming Way

Madison, WI 53717-1954

(866) 368-4807 (North America only)

+1 608 824-2900 (all other locations)

[use international toll-free numbers? see www.tomotherapy.com]

support@tomotherapy.com

CONFIDENTIALITY TERMS

In consideration of the training and information received by the training recipient and his or her employer (collectively, "Recipient"), Recipient and Tomotherapy Incorporated ("Company") **AGREE AS FOLLOWS:**

1. Nondisclosure of Confidential Information. Recipient shall not use or disclose, directly or indirectly, any Confidential Information except during the term of and in strict accordance with the licenses for such Confidential Information (the "License Period"). In addition, for a period of two (2) years following the License Period, Recipient shall not use or disclose, directly or indirectly, any Confidential Information. This prohibition does not apply to Confidential Information after it has become generally known in the industry in which the Company conducts its business.

2. Nondisclosure of Trade Secrets. During the License Period, Recipient shall do what is reasonably necessary to prevent unauthorized misappropriation or disclosure and threatened misappropriation or disclosure of the Company's Trade Secrets and, after the License Period, Recipient shall not use or disclose the Company's Trade Secrets as long as they remain, without misappropriation, Trade Secrets.

3. General Know-How. Nothing in this Agreement shall be deemed to prevent Recipient's post-engagement use of Recipient's general knowledge and skills acquired or enhanced during the License Period or to prohibit Recipient from seeking other work after the License Period, so long as such use or work does not violate the provisions of this Agreement.

4. Delivery of Materials to Company. Immediately upon termination of the License Period, Recipient will return to the Company all written, recorded, and graphical material, documents, hardware, software and items relating to the business of the Company (and copies thereof) (other than owned by Recipient) in Recipient's possession or under Recipient's control regardless of whether such materials, documents and items contained Confidential Information.

5. Representations and Warranties. Recipient represents and warrants (i) that Recipient has no obligations, legal or otherwise, inconsistent with the terms of this Agreement or with Recipient's undertaking of a relationship with the Company, and (ii) that Recipient has not entered into and will not enter into any agreement (whether oral or written) in conflict with this Agreement. Recipient's representations, warranties, and obligations contained in this Agreement shall survive after the License Period.

6. Change in Employment Status. The covenants of this Agreement shall remain in force in the event of any change in the employment status of any of Recipient's employees.

7. Injunctive Relief; Breach. Recipient acknowledges that failure to carry out any obligation under this Agreement, or a breach of any provision herein, will constitute immediate and irreparable damage to the Company, which cannot be fully and adequately compensated in money damages and which will warrant preliminary and other injunctive relief, an order for specific performance, and other equitable relief. Such remedy, however, shall be cumulative and nonexclusive and shall be in addition to any other remedy to which the parties may be entitled.

8. Assignment. Neither this Agreement nor any rights or duties of Recipient hereunder shall be assignable by Recipient, and any such purported assignment shall be void. The Company may, however, assign all or any of its rights hereunder.

9. Entire Agreement; Amendment. This Agreement constitutes the complete understanding between Recipient and the Company on this subject and may not be modified or amended, except by writing and executed by a duly authorized representative of the Company and by Recipient. This Agreement is intended to be the final, complete, and exclusive statement of the terms of the parties' agreements regarding these subjects and supersedes all other prior and contemporaneous agreements and statements on these subjects. This Agreement is effective for Recipient's entire License Period, even if such period commenced prior to the date of this Agreement.

10. Definitions. All capitalized terms not defined in the text of this Agreement, have the following meanings:

(a) "Confidential Information" means information, to the extent it is not a Trade Secret, which is possessed by or developed for the Company and which relates to the Company's existing or potential business or technology, which information is generally not known to the public and which information the Company seeks to protect from disclosure to its existing or potential competitors or others, including, without limitation, business plans, strategies, existing or proposed bids, costs, technical developments, existing or proposed research projects, financial or business projections, investments, marketing plans, negotiation strategies, training information and materials, information generated for client engagements and information stored or developed for use in or with computers. Confidential Information also includes information received by the Company from others which the Company has an obligation to treat as confidential, including all information obtained in connection with client engagements and partnering arrangements.

(b) "Trade Secret" means all information possessed by or developed for the Company, including, without limitation, a compilation, program, device, method, system, technique or process, to which all of the following apply: (i) the information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use and (ii) the information is the subject of efforts to maintain secrecy that are reasonable under the circumstances.

11. Waiver of Breach. The waiver by either party of the breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either party. Any waiver by either party must be in writing and signed by a representative who has the authority to bind such party.

12. Invalidity of any Provision. The provisions of this Agreement are severable, it being the intention of the parties hereto that should any provision hereof be invalid or unenforceable, such invalidity or unenforceability of any provisions shall not effect the remaining provisions hereof, but the same shall remain in full force and effect as if such invalid or unenforceable provision or provisions were omitted.

13. Governing Law; Jurisdiction and Venue; Construction. This Agreement shall be governed by the internal laws of the State of Wisconsin. The parties irrevocably consent to the sole and exclusive jurisdiction and venue in the appropriate state or federal court in Wisconsin. This Agreement shall be construed without regard to any rules of construction concerning the draftsman hereof.

14. Notices. Any notice, request, consent or approval required or permitted to be given under this Agreement or pursuant to law shall be sufficient if it is in writing, and if and when it is hand delivered, faxed, or sent by regular mail, with postage prepaid, to Recipient's residence (as noted in the Company's records), or to the Company's principal office, as the case may be.

15. Recipient Acknowledgment. Recipient acknowledges that Recipient has read and understands this Agreement, and that Recipient has entered into it freely and voluntarily based on Recipient's own judgment and not on any representations or promises other than those contained in this Agreement.