



Dose Monitors — Daily QA Monitors

TheraPro — DAILY OUTPUT AND SYMMETRY MONITOR

High quality, ease of use, versatility and performance repeatability are the prime objectives in the TheraPro design. Daily output, symmetry, flatness, and energy checks of radiation therapy treatment machines have never been easier, faster or as accurate.



TheraPro's COMPONENTS:

CHAMBER ARRAY

Six vented ion chambers appropriately located in a 20 x 20 cm field with automatic temperature and pressure correction.

DATA ACQUISITION MODULE

Six channel electrometer that sends data to the controller located at the console via a readily-available 15 m cable.

CONTROLLER

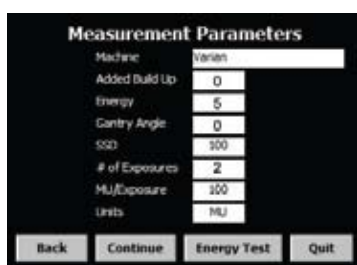
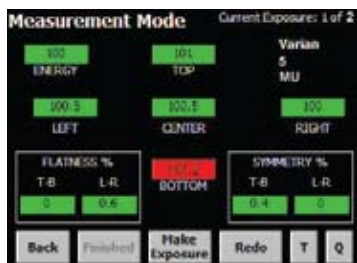
Provides data logging, measurement results and data plotting, charting and reporting using WINDOWS® operating software.

DIODE DOSIMETRY SOFTWARE (OPTIONAL)

Can be used as a 1–5 channel dose verification monitor.

DIODE DETECTORS (OPTIONAL)

State-of-the-art detectors are available for a wide range of photon and electron energies.



Dose Monitors — Daily QA Monitors

Beam Sentry 2 — DAILY OUTPUT CONSTANCY MONITOR

- Six (6) sealed ion chambers
- Air density correction not necessary
- Reversible detector
- Dual entrance windows, 6 and 18 mV
- Electrometer protected from radiation
- Remote operation using a standard triax extension cable
- Powered by a single 9V battery
- Electronic bias — full and half voltage



The Beam Sentry 2 provides a convenient and economical means of performing daily radiation output constancy checks of radiation therapy treatment machines.

This lightweight, portable unit with remote readout features the accuracy of a digital display; a sealed plane-parallel ion chamber to eliminate corrections for barometric pressure and temperature changes; and two entrance windows, each with 10 x 10 cm field markings, one with build-up optimized for 6 mV and electrons beams, and the other with buildup optimized for 18 mV.



Dose Monitors — Diode Dosimetry

Model 22D — DUAL DIODE DOSIMETER

- Dual digital display
- Two calibrations per channel
- Accepts a wide variety of positive or negative diode detectors
- Angled front panel for easy reading and control



The CNMC Model 22D is a compact, economical, battery-operated, dual-channel diode monitor designed for simplicity of operation without compromising accuracy and reliability.

The user-friendliness of the Model 22D is immediately apparent by its sloping control panel that allows operation from a convenient angle.

Data collection from both channels is read simultaneously on two large, easy-to-read liquid crystal displays.

A special inherent feature of the Model 22D is its compatibility with both negative and positive current output diode detectors: EquiDose®II, Isorad™ QED, or VeriDose.

This flexibility allows the utilization of all of your existing diode detectors.



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Dose Monitors — Diode Dosimetry

EquiDose®II — SOLID STATE DETECTORS

- Hemispherical geometry for easy placement and alignment
- High impedance
- Excellent output uniformity vs. gantry angle
- Outstanding stability, < 0.1% per kGy at 6 mV photon beam
- Available in various water equivalencies for photons and electrons
- Tygon® — sheathed cable eliminates kinking



ISORAD-3™ — CYLINDRICAL DIODE DETECTORS



- Cylindrical geometry, angular corrections not required
- High impedance for minimum drift
- Typical output: 27 nC/Gy
- Outstanding stability, < 0.1% per kGy, 6 mV photon beam
- Available in 3 photon energy ranges
- Reproducibility is better than 0.5% for measurements > 1 cGy



Dosimetry Phantoms

SLAB PHANTOM MATERIAL

Applications:

- Output calibration
- Energy check
- Electron beam calibration
- Film dosimetry

Polystyrene

Milky color, density of 1.05 g/cm³, available in 25 x 25 cm sections of varying thickness

Acrylic

A clear plastic, C₅H₈O₂, polymethylmethacrylate or PMMA, has a density of 1.185 g/cm³ and is available in 25 x 25 cm sections of varying thickness



Plastic Water® — SLAB PHANTOM MATERIAL

- Calibrate photon and electron beams within 0.5% of true water dose
- Available in 0.1 cm and other thicknesses
- Available slab sizes:
 - 20 x 20 cm
 - 25 x 25 cm
 - 30 x 30 cm
 - 40 x 40 cm
- Custom cavity slabs are available to accommodate any ion chamber



Plastic Water is a registered trademark of CIRS, Inc.



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Dosimetry Phantoms

Virtual Water™ — SLAB PHANTOM MATERIAL

- Scatters and attenuates x-rays the same way as water without charge storage problems
- Can be used for both photons and electrons
- Within 0.5% of water equivalence, batch tested and verified
- Available slab sizes:
 - 20 x 20 cm
 - 30 x 30 cm
 - 40 x 40 cm
- Chamber slabs are available to accommodate most ion chambers



Solid Water® — PHANTOM MATERIALS

- Scatters and attenuates x-rays the same way as water without storage charge problems
- Can be used for both photons and electrons
- Ionization readings obtained in Solid Water® are virtually the same as those in liquid water for the same depth and exposure duration
- Available slab sizes:
 - 20 x 20 cm
 - 30 x 30 cm
 - 40 x 40 cm
- Achieves calibrations within 1% of the true dose
- Chamber slabs are available to accommodate most ion chambers



Virtual Water is a trademark of Med-Cal, Inc., Solid Water is a registered trademark of Gammex RMI.



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Dosimetry Phantoms

Model 045 — BRACHYTHERAPY ULTRASOUND QA PHANTOM

The Model 045 Brachytherapy Ultrasound QA Phantom, used in conjunction with the Model 053G Ultrasound Prostate Phantom, offers a complete solution for implementing a QA program specific to transrectal ultrasound used for guidance of prostate brachytherapy as recommended by AAPM Task Group 1281, including:

- Depth of penetration
- Resolution
- Distance, area and volume measurements
- Geometric consistency
- Rugged carrying case
- 4-year warranty



Model 008 — DYNAMIC THORAX PHANTOM

The Model 008 Dynamic Thorax Phantom is designed to investigate and minimize the impact of organ motion and patient positioning errors in radiation therapy.

- Evaluate image acquisition and measure tumor dose of static and dynamic targets
- Assess temporally-modulated beam deliveries
- Calibrate various real-time tumor localization and tracking devices
- Verify lung tumor treatment plan during IMRT/IGRT



Dosimetry Phantoms — IMRTs

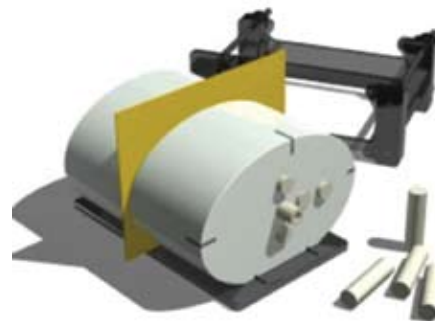
Model 670 — HEAD SCATTER MINI-PHANTOM

- Permits quick evaluation of head scatter
- Water equivalent Plastic Water®
- Meets requirements as described in ESTRO Booklet 3
- May be drilled for any cylindrical ion chamber
- Available with or without stand



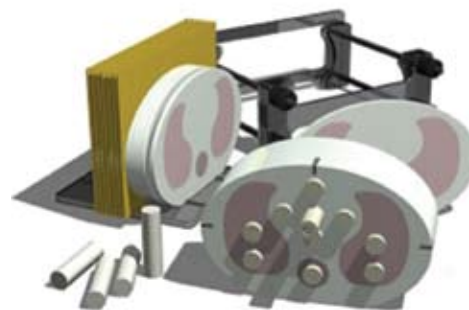
Model IMRT-2H5 — IMRT HOMOGENEOUS PHANTOM

- Easily check 2D dose distributions
- Make point dose measurements in multiple planes
- Quickly verify individual patient treatment plans
- Calibrate film with ion chamber



Model IMRT-2LFC — IMRT THORAX PHANTOM

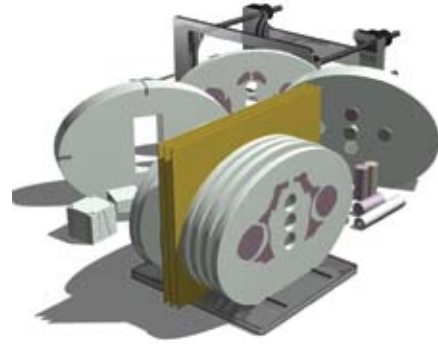
- Check dose distributions in sensitive areas
- Check depth dose and absolute dose
- 2D and 3D isodoses
- Verify individual patient treatment plans
- Calibrate film with ion chamber
- Verify heterogeneity corrections



Dosimetry Phantoms — IMRTs

Model IMRT-2PRA — IMRT PELVIC 3D PHANTOM

- Check dose distributions in sensitive areas
- Check depth dose and absolute dose
- 2D and 3D isodoses
- Verify individual patient treatment plans
- Calibrate film with ion chamber
- Verify heterogeneity corrections



Model IMRT-2HN — IMRT HEAD AND NECK PHANTOM

- Check dose distributions in sensitive areas
- Measure absolute dose in multiple locations
- Test and compare various dose measurement devices for thorough analysis of the IMRT system



Model IMRT-2H9K — POINT DOSE MEASUREMENT PHANTOM

- Infinite measurement locations within 11.2 cm diameter area
- Water equivalent
- Accommodates any ion chamber, diode, MOSFET or TLD
- Configure with or without heterogeneities



Calibration, Repair and Modification Services

CNMC ADCL Calibration Services

When you schedule your system for calibration through CNMC, we will thoroughly inspect your dosimeter, ion chamber and extension cable, and report on conditions requiring attention. This service is provided to you at no additional charge.

CNMC will then schedule your equipment to be calibrated at an AAPM ADCL:

- K&S Associates, Inc.
- University of Texas MD Anderson Cancer Center
- University of Wisconsin

Dosimeter Modifications

CNMC can modify and significantly improve the following dosimeters:

- Keithley 614 and 602
- Capintec 192
- Victoreen 500

Dosimeter Repair

CNMC can generally repair and significantly improve your dosimeter/electrometer regardless of the manufacturer. Repairs at half the cost and half the turn-around time are common at CNMC.

Ion Chamber Repair

Same day repairs are possible at CNMC — typical chamber repairs include:

- Thimble replacement (non-waterproof types)
- Connector repair or replacement
- Correcting leakage condition
- Resheating waterproof ion chambers

Dosimeter Repair

CNMC manufactures custom lengths of low-noise triaxial or coaxial cables with your choice of connectors. CNMC will repair or modify your extension cable. Repairs and modifications include:

- Connector repair or replacement
- Conversion of any style connector: BNC, TNC, PTW-M, MDH, etc.
- Installation in a cable reel

