

## LUCY™ THORX

### ALL-IN-ONE SBRT QA PHANTOM

Single phantom solution for CT SIM and Linac QA. Improve clinical efficiency with integrated imaging, mechanical, dosimetry and SBRT QA.



### VERSATILE USER EXPERIENCE

The ThorX is designed to meet critical testing standards such as AAPM TG-53 for treatment planning system (TPS) QA, TG-66 for CT Simulator QA, TG-142 for QA of medical linear accelerators, and other end-to-end commissioning and routine QA activities.

### VALUABLE QA ELEMENTS

- Visual Laser Alignment
- Geometric Targets
- Pseudo-anthropomorphic anatomy
- Multiple ion chamber cavities
- Rotating Film Rod Insert with ion chamber cavity
- Spine Film Insert
- Unique target shapes and with known margins and volumes

# LUCY THORX

## SBRT QA

- Pseudo-anthropomorphic thorax shape
- Kidney target and margin
- Triangle target and margin
- Spine Insert
- Three vertebrae and spinal cord
- Film measurement for high dose gradient verification with target (vertebra) and organ avoidance (spinal cord)

## CT SIM QA

- Laser and CT scanner orientation
- Scan localization, laser movement and couch movement verification
- Gantry Tilt verification
- Intuitive DICOM orientation verification as the image set is transferred from CT SIM to TPS

## LINAC IMAGING QA

### CONSTANCY & MONITORING

- HU density
- Field Uniformity
- High Contrast Resolution (line pairs)
- MTF test
- Spatial Integrity and Geometric Distortion
- Slice thickness verification
- Planar MV and kV Scaling
- Mechanical QA
- 2D/2D, 3D/3D MV/kV coincidence

## SGRT QA

- Pseudo-anthropomorphic shape that can be tracked with SGRT cameras
- Phantom can go through scan, plan, localize and treat just like a patient
- Accuracy of tracking can be correlated to dose targeting/delivery accuracy

## LUCY THORX MATERIAL SPECIFICATIONS

| Material        | Material Density (g/cc) | Nominal CT Density # | Relative Electron Density to Water |
|-----------------|-------------------------|----------------------|------------------------------------|
| Virtual Water   | 1.047                   | 20                   | 1.013                              |
| Cortical Bone   | 1.5                     | 800                  | 1.415                              |
| Blue Water      | 1.09                    | 70                   | 1.05                               |
| Adipose Fat     | 0.92                    | -80                  | 0.9                                |
| Lung            | 0.28                    | -700                 | 0.259                              |
| Alumina Ceramic | 3.875                   | 2600                 | N/A                                |
| Delrin          | 1.412                   | 400                  | N/A                                |
| Tungsten Alloy  | 14.947                  | 17000                | N/A                                |
| Acrylic         | 1.19                    | 120                  | N/A                                |
| Copper          | 8.96                    | 2500                 | N/A                                |
| Aluminum Alloy  | N/A                     | 580                  | N/A                                |

## LUCY THORX SPECIFICATIONS

**PHANTOM DIMENSIONS** — 250.7 x 320 x 210mm // **MATERIAL & WEIGHT** — 13.15kg, Virtual Water

**45MM SPHERE** — 45mm diameter, 50.96cc volume, Blue Water // **KIDNEY TARGET** — 38.9cc volume, Blue Water

**KIDNEY MARGIN** — 241.75cc volume, Adipose Fat // **TRIANGLE TARGET** — 38.55cc volume, Blue Water

**TRIANGLE MARGIN** — 104.29cc volume, Lung // **LEFT LUNG** — 155.67cc volume, Lung

**FILM ROD INSERT** — 120.71mm L, 76.35mm D, Virtual Water // **FILM ROD INSERT TARGET** — 10.09cc volume, Acrylic

**FILM ROD INSERT PRE-CUT FILM** — 104.3 X 65.2mm, Gafchromic film

**SPINE FILM INSERT** — 90 X 44.6 X 50.8mm, Virtual Water

**SPINE FILM INSERT PRE-CUT FILM** — 86.8 X 47.6mm, Gafchromic film

**FILM CALIBRATION STRIP** — 76.2 X 25.4mm, Gafchromic film