INSTRUCTIONS FOR USE OF SINGLE-BEAM STEREOTACTIC RADIOSURGERY PHANTOM

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If you have any questions, please contact the Radiation Quality Assurance Laboratory at:

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Please find enclosed the "Single-Beam Stereotactic Radiosurgery" verification system (Fig. 1). This system is comprised of a phantom base, a top plate and, for each SRS cone you wish to verify, a cylindrical dosimetry insert. Each dosimetry insert contains 2 TLD capsules, one capsule located at a depth of 1.5 cm and the other at 7.5 cm. The phantom base and top plate provide adequate scattering conditions.

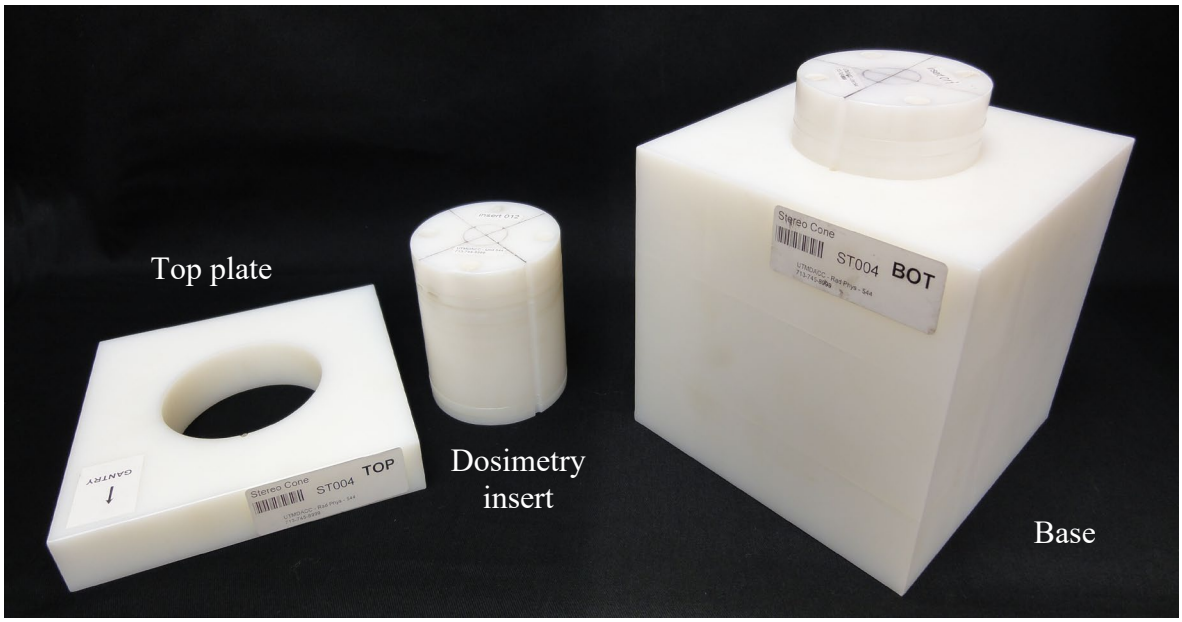

Figure 1: Single-Beam Stereotactic Radiosurgery verification system

Instructions for use:

1. Verify the machine reference output.

2. Place the phantom base block on the treatment couch, with the side labeled "gantry" towards the gantry. Use a level to ensure that the block is level. Shim the phantom, or move it to a more level segment of your treatment couch, if necessary.

3. Insert one of the cylindrical inserts into the base, with the label "up" towards the beam. The cylinder will fit into the phantom base in only one orientation, determined by the key in the block.

4. Slide the top plate over the insert, with the gantry arrow pointing towards the gantry. The SRS Single-Beam verification system will look like the setup in Fig.2.

Figure 2: Assembled SRS Single-Beam verification system

5. Set your SRS machine's SSD (e.g. 100 cm) to the surface of the cylindrical insert.

6. Attach the SRS cone to be verified to your accelerator. **(NOTE: The smallest cone diameter that can be used is 12.5 mm. The smallest field size can be used is 1.5cm x 1.5 cm).** Use a spirit level to ensure that the cone and as such, the photon beam are vertical. The level should be placed on a machined surface; the attachment plate for the cone is generally a convenient place.

7. Center the phantom in your treatment field. Each cylindrical insert is marked with a 2 cm diameter circle as well as two perpendicular scribe marks intersecting at the center of the cone. The block should be set up based on the projection of the light field rather than lasers. **(NOTE: The small field sizes, sharp dose gradients and dosimeter size associated with the SRS verification require lining up the SRS cone delivery system and SRS verification phantom dosimetry insert as accurately as possible in order to ensure an accurate measurement.)**

8. Calculate the monitor unit setting to deliver approximately 600 cGy to a point at a 1.5 cm depth in water, centered in the field (the location of the upper TLD capsule).

9. Irradiate the phantom to the monitor units calculated.

10. Record the cone identification, the cylindrical inset number (labeled on top of the dosimetry inset), the monitor unit setting, and the calculated doses at 1.5 and 7.5 cm depths in a water phantom on the attached irradiation form.

11. Remove the top plate and place it aside.

12. Remove the irradiated dosimetry and store it outside the treatment room.

13. Repeat steps 3 through 12 for any additional SRS cones you wish to verify.

14. Ensure that the irradiation form has been completely filled out (the irradiation form has 2 pages).

15. Place all of the SRS Single-Beam verification system materials in the original packaging and return using the prepaid enclosed shipping label. Be sure to lock the case, using the lock provided.

SRS Single-Beam Phantom Verification System
Irradiation Form

Institution: _____

Address: _____

_____

Person performing irradiation: _____

Physicist to receive report: _____

Email address: _____

Person to call in case of questions: _____

Phone number: _____ Fax Number: _____

E-mail address: _____

Treatment Unit: _____

Manufacturer: _____ Model _____ Photon Energy: _____

In-house specification: _____ Serial number _____

Stereotactic system: _____

Manufacturer: _____ Model: _____

Date of Irradiation: _____

SSD: _____ cm to top of insert.

Insert Number	Cone Designation	Monitor Unit Setting	Dose (cGy) at 1.5 cm	Dose (cGy) at 7.5 cm

For Office Use Only	TLD Batch 16	Phantom ID #	Code	Date Sent		Date Rec'd	

SRS Single-Beam Phantom Verification System
Irradiation Form (cont'd)

Output of the beam: _____ cGy/MU to: □ Muscle □ Water

□ SAD □ SSD Reference field size:_____ depth:_____

Please complete the following information for each cone designation:

Cone Designation	d_{max} (cm)	Output factor at d_{max}	PDD At 1.5 cm	PDD at 7.5 cm