IGRT Benchmark
Draft Proposal

- Verify coincidence of imaging and treatment isocenters

- Verify IGRT software correctly shifts

- Avoid need to send phantoms by using materials available in all institutions
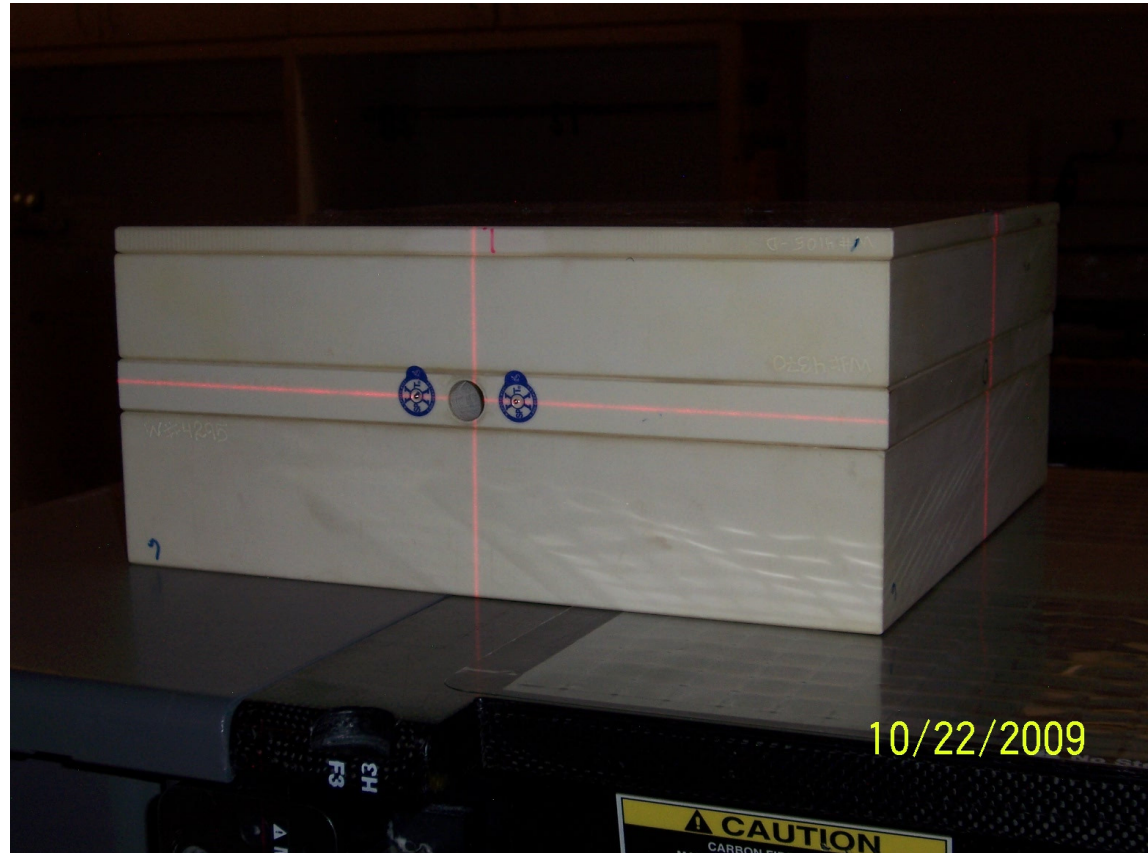
IGRT Benchmark

Draft Proposal

Create a phantom using solid water and marker BBs

IGRT Benchmark

Draft Proposal

Place a solid water slab with an ion chamber air cavity ~5cm depth. Place a BB 2 cm superior and one 2 cm inferior of the air cavity.
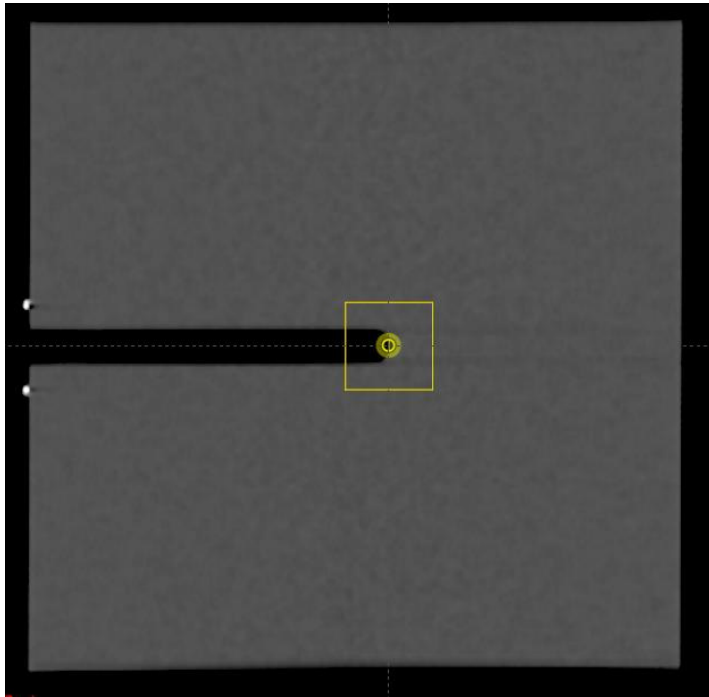
IGRT Benchmark

Draft Proposal

On the top slab place two BBs, one 5 cm superior and one 5 cm inferior of the center.

10/15/2009

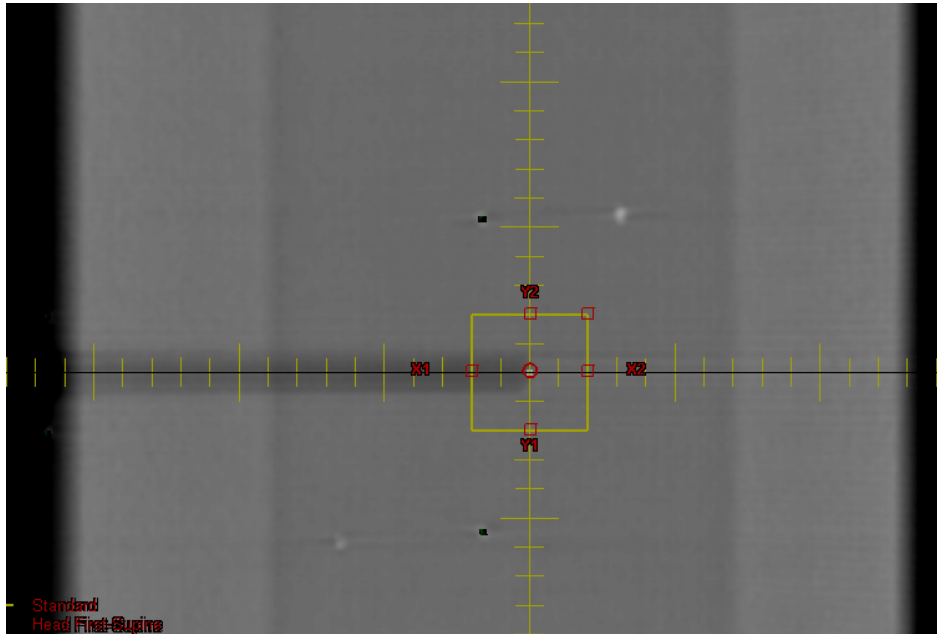# IGRT Benchmark
Draft Proposal

CT scan the phantom and transfer to the planning system

Create a 4cm x 4cm "AP" field with the isocenter at the tip of the air cavity

IGRT Benchmark
Draft Proposal

BEV DRR of
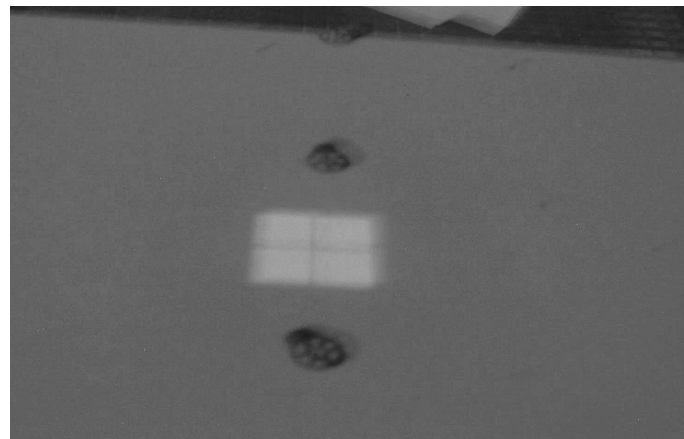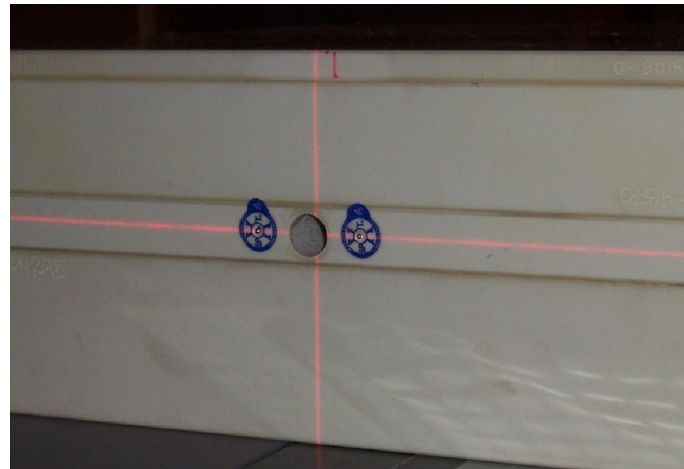4x4 field
showing BBs
and air cavity

Transfer the plan
to the IGRT
treatment machine

IGRT Benchmark
Draft Proposal

Take the phantom to the treatment room.

Set the height to the center of the air cavity and align the phantom so that the 4cm X 4cm field is approximately centered between the 2 BBs on the top slab.
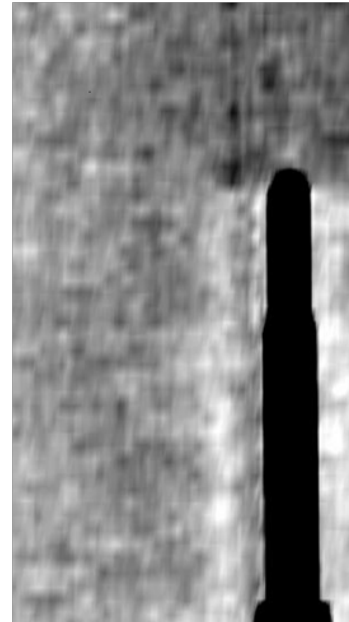
IGRT Benchmark
Draft Proposal

Obtain an image of the phantom using the IGRT system

MV cone beam image of initial positioning of air cavity slab

EPID image of initial positioning of air cavity slab

IGRT Benchmark
Draft Proposal

With the techniques and software used for IGRT, correct the position of the tip of the air cavity to isocenter and the adjust the rotation of the slab to that planned.
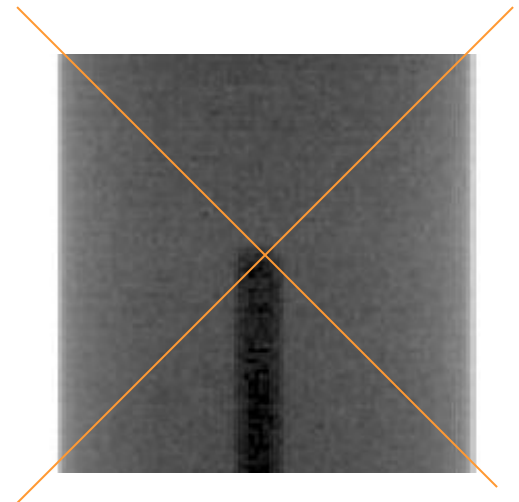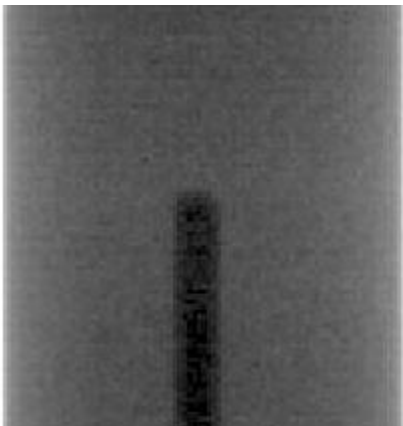
Print out the shifts and rotation performed.

IGRT Benchmark
Draft Proposal

Take an image (EPID) with the 4cm X 4 cm treatment field.

Submit this image.

IGRT Benchmark
Draft Proposal

Possibilities:

•Total system verification (imaging to planning to delivery)

•Requires equipment readily available

•No shipping of phantoms

Limitations:

•Accuracy ~ 1mm

•Will not detect "pitch and roll" discrepancies