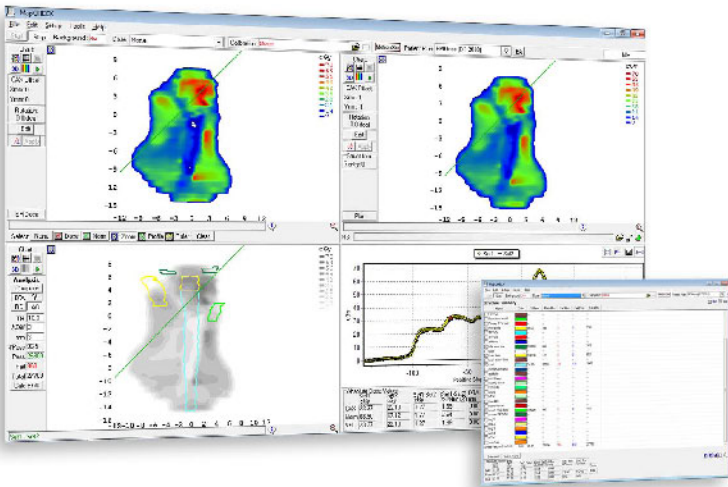


# EPI Dose™

## The Absolute in EPID Dosimetry

Convert any EPID image to an absolute dose QA plane for analysis in the MapCHECK™ software

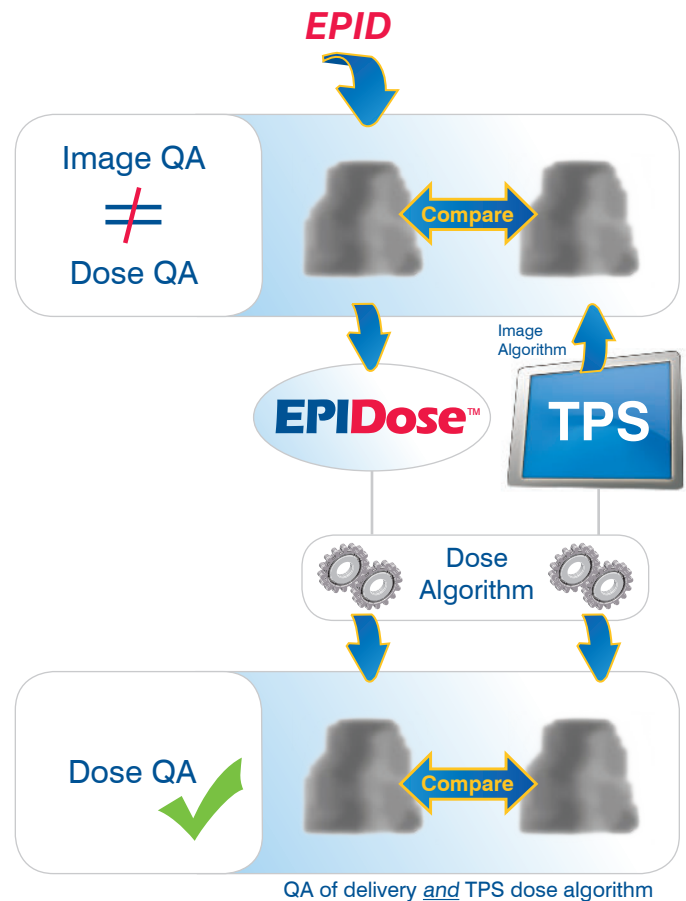


### The EPIDose Advantage

- Quick conversion of MV EPID images to dose
- Supports IMRT and rotational delivery QA
- Independent of TPS and linac
  - › Dose QA audits the TPS and linac
  - › Catch errors image QA would miss
  - › Tests output of TPS dose algorithms
  - › Independent algorithms and software
  - › No assumptions
- Easy to use
  - › No buildup on EPID
  - › Combine split fields into one
  - › Maximizes benefits of MV EPID
  - › Supports any EPID distance and any dose plane setup (depth/SSD)
- Unparalleled accuracy
- Use with 3DVH™ - Powerful 3D and DVH analysis
- Market leading MapCHECK software for complete analysis

### The EPIDose Physics Model

- Unique corrections applied to every measurement
  - › Output factor variation (per segment)
  - › Dose distribution kernel (phantom scatter)
  - › Absolute dose commissioning (MapCHECK)

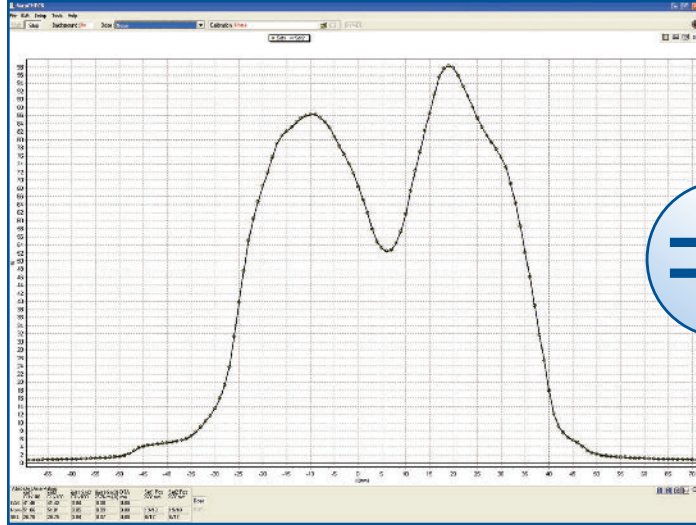


# Clinical Proof



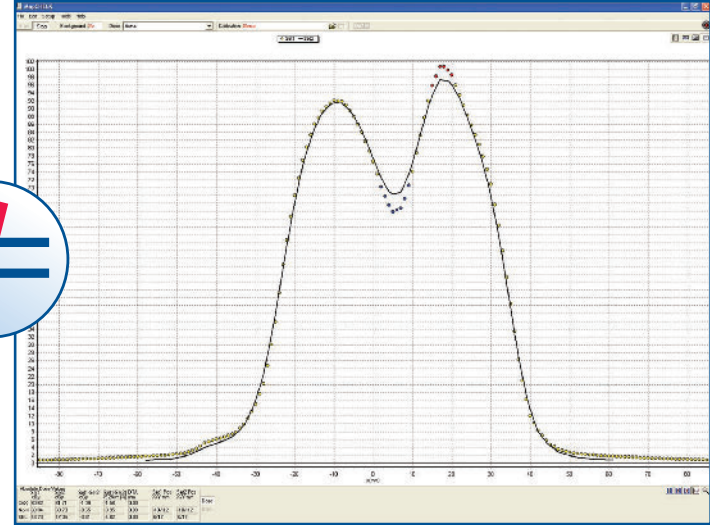
## Superior to Image Based QA

EPID image vs. TPS “predicted” image >

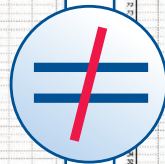


EPID image (dotted) agrees with TPS predicted image (line). The TPS dose algorithm is not audited, the QA is not thorough

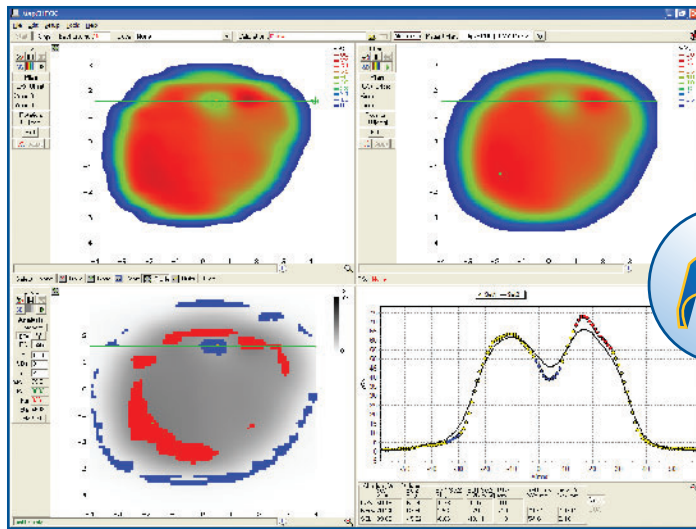
EPIDose vs. TPS dose >



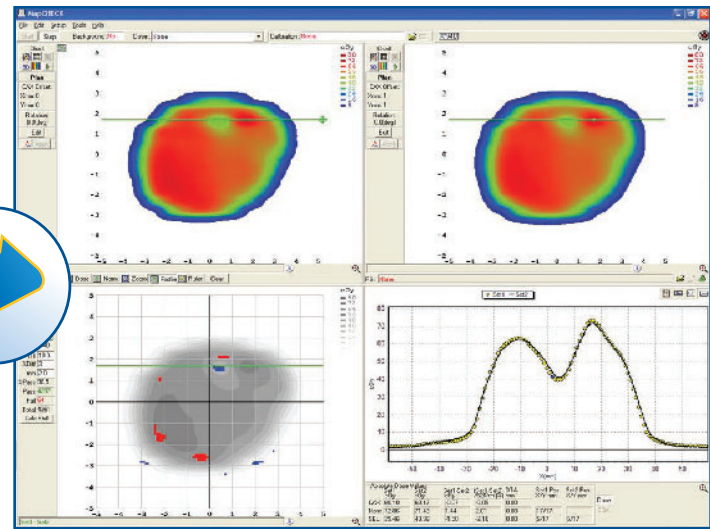
The same field with EPIDose algorithm and the TPS algorithm applied. A difference is clearly evident.



## Dose Model Improvement



EPIDose (upper left) vs. TPS (upper right). The TPS penumbra is very smooth caused by using volume-averaged ion chamber profiles for beam model commissioning. The TPS is underestimating the profile gradients.



The same field, *after* an improved beam model was made in the TPS using a smaller detector. EPIDose revealed the volume averaging error in the commissioning data and confirmed the correction.

**EPIDose works in seconds and converts any EPID image to dose in three steps:**

**1** The raw EPID image is projected to the desired dose plane location and corrected for output factor differences between EPID and dose. Each MLC sub-field (segment) is corrected for the source distribution of scattered photons.

**2** The results of step 1 are convolved with a “Dose Redistribution Kernel” which converts the dose from EPID response (sharper than water) to a water equivalent scattering of dose.

**3** Calibration of the EPID occurs with the calibration data that was stored in the model using MapCHECK.

All data used is best available at time of publication. Data is subject to change without notice. All Content ©2010, Sun Nuclear Corporation. All Rights Reserved.