

THE 2026 US SGRT  
COMMUNITY MEETING  
**ORLANDO**  
MAY 7-8, 2026

A Whole New World of SGRT



Josh Naylor,  
Physicist

**NHS**  
University Hospitals Dorset  
NHS Foundation Trust

Validation, Commissioning and Early Clinical Results for

**Beam Guide**

# Beam Guide™

Preparation Treatment



Lt Breast ISO 1

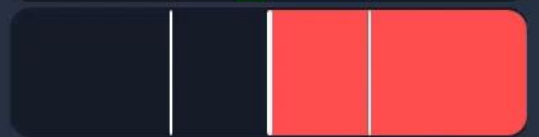


SGRT BODY

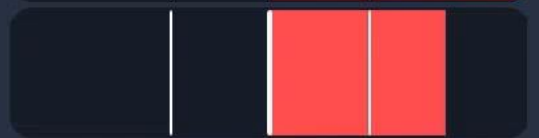
VRT<sub>cm</sub> -0.20



LNG<sub>cm</sub> 3.39



LAT<sub>cm</sub> 1.02



## Beam Guide:

- Show where radiation will be delivered, including before beam-on.
- Real time **projected** and **planned** beam.
- A **'complete setup'**: Patient & beam

Reference

1 2 3

Beam Guide

All Fields

0.58

-0.58

Coaching

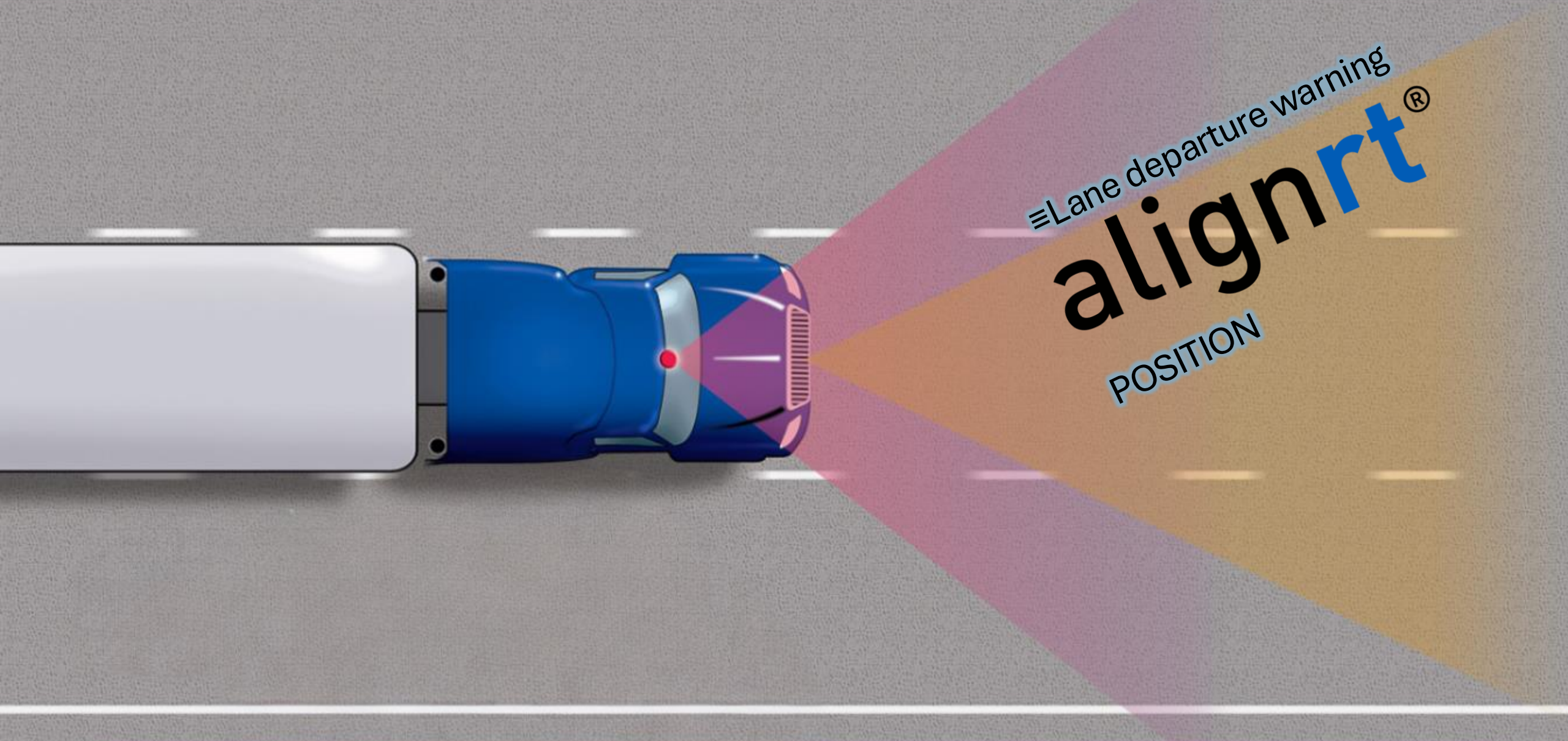
Surface Deformation **Video**

Planned Beam Outline

Real Time Beam Projection

Beam Guide

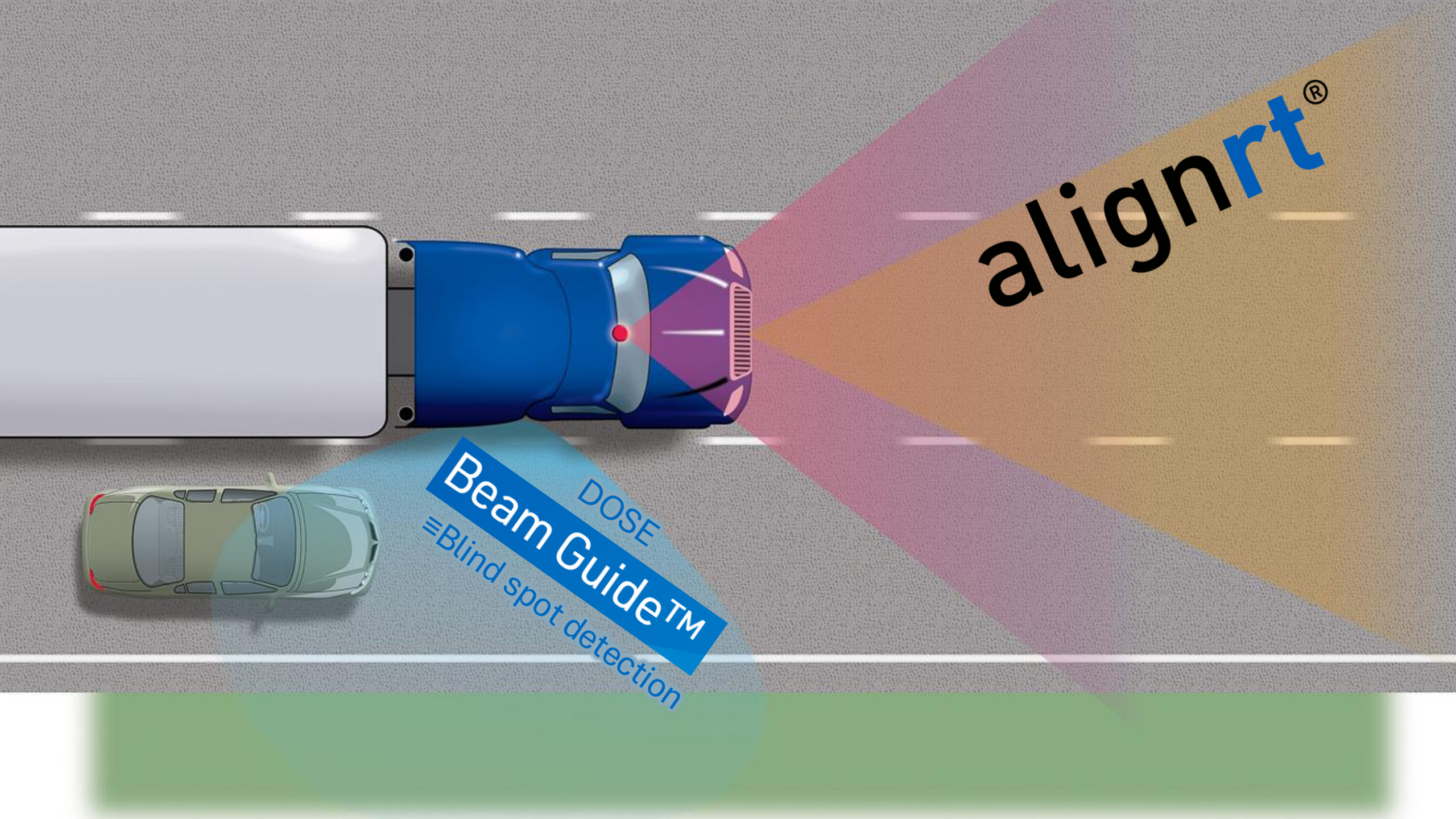
All Fields



≡ Lane departure warning

**alignrt**®  
POSITION

**Beam Guide**



alignrt<sup>®</sup>

Beam Guide<sup>™</sup>  
DOSE  
≡Blind spot detection



**Beam Guide**



**2001: a space**

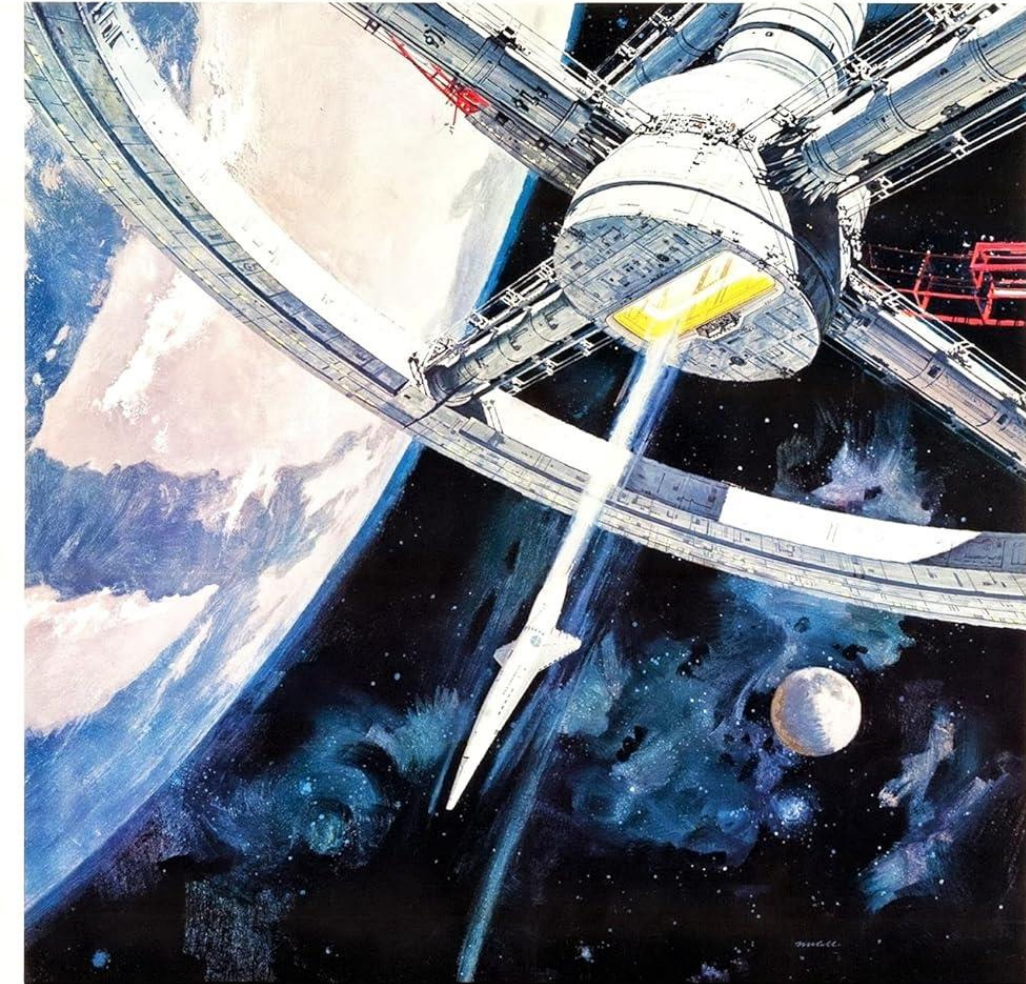
MGM PRESENTS A STANLEY KUBRICK

Super Panavision® and Metro



# An epic drama of adventure and exploration

Space Station One: your first step in an Odyssey that will take you to the Moon, the planets and the distant stars.



# 2001: a space odyssey

MGM PRESENTS A STANLEY KUBRICK PRODUCTION

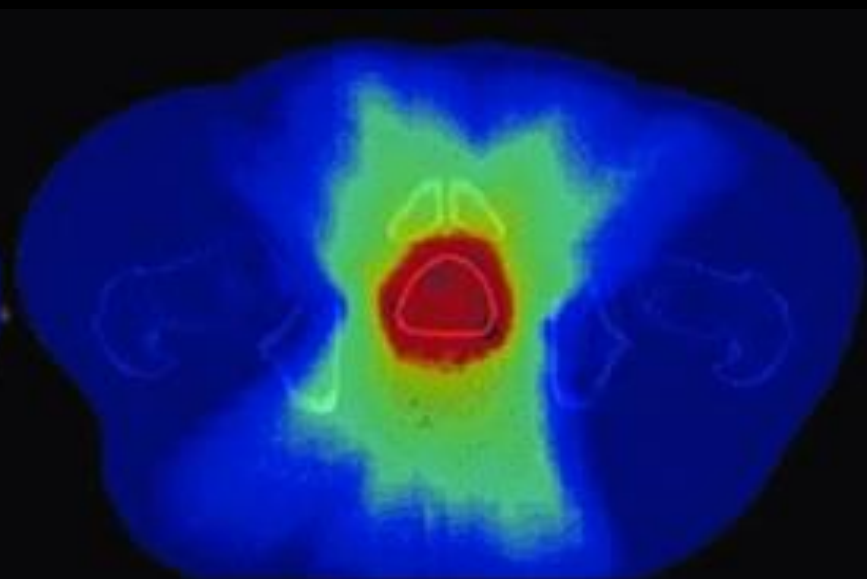
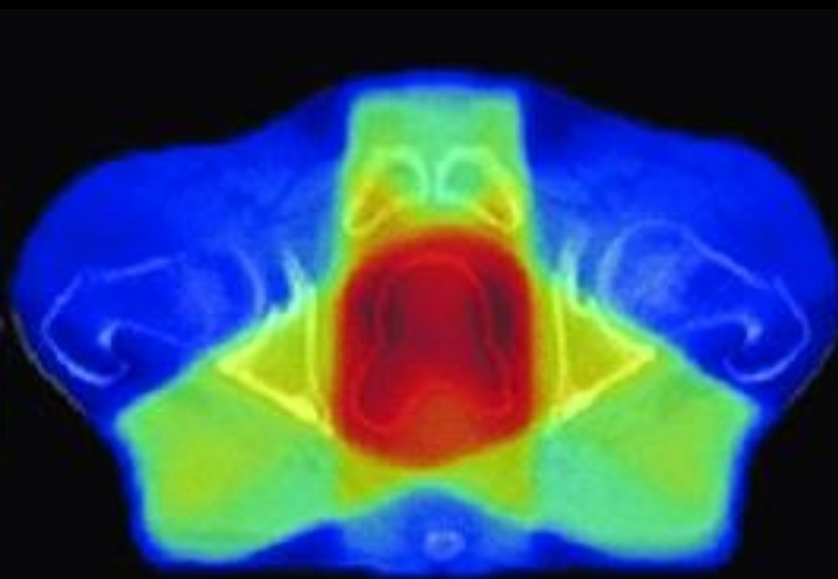
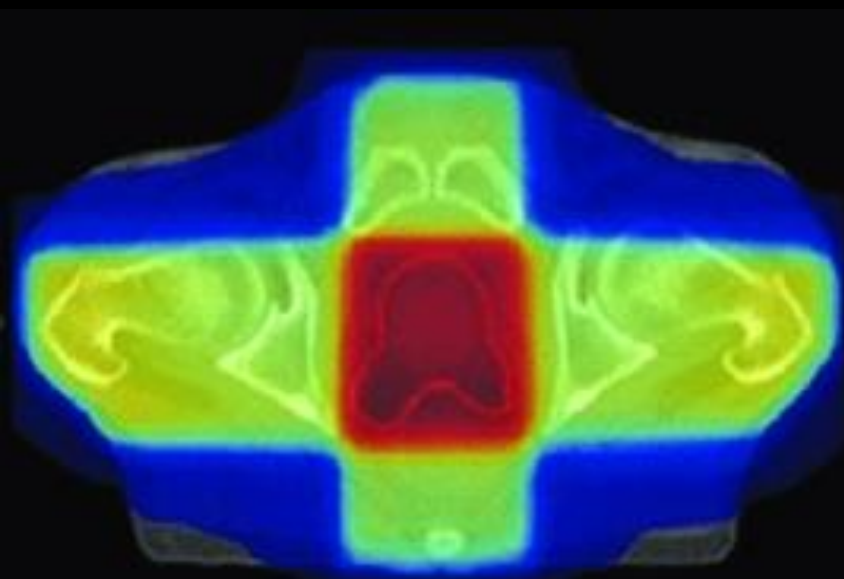
Super Panavision® and Metrocolor

# SGRT

~1995  
3dCRT

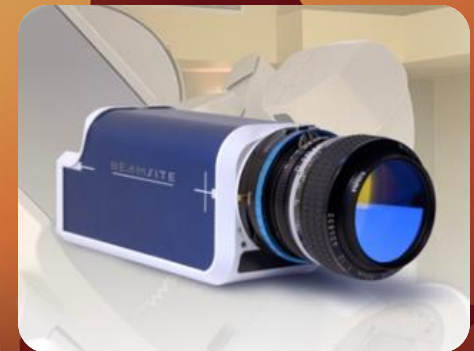
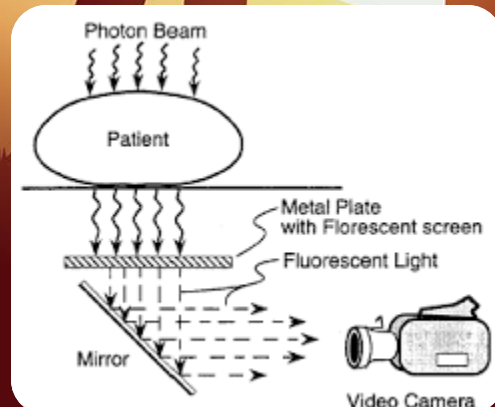
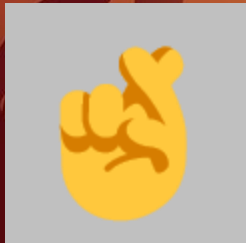
~2000  
IMRT

~2005  
VMAT (&IGRT)

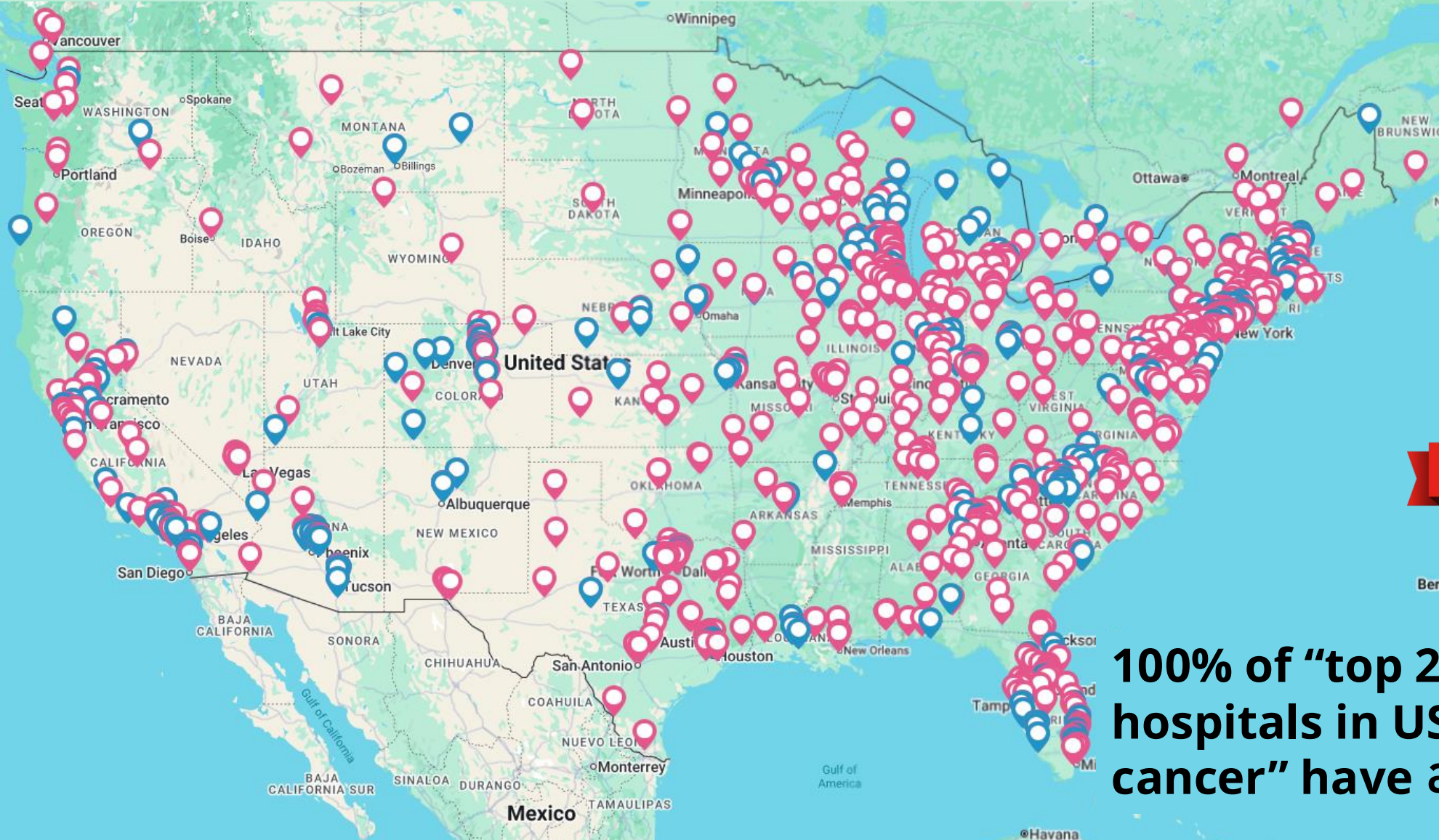


Dose conformity improvements...

# ...necessitated image guided radiotherapy evolution

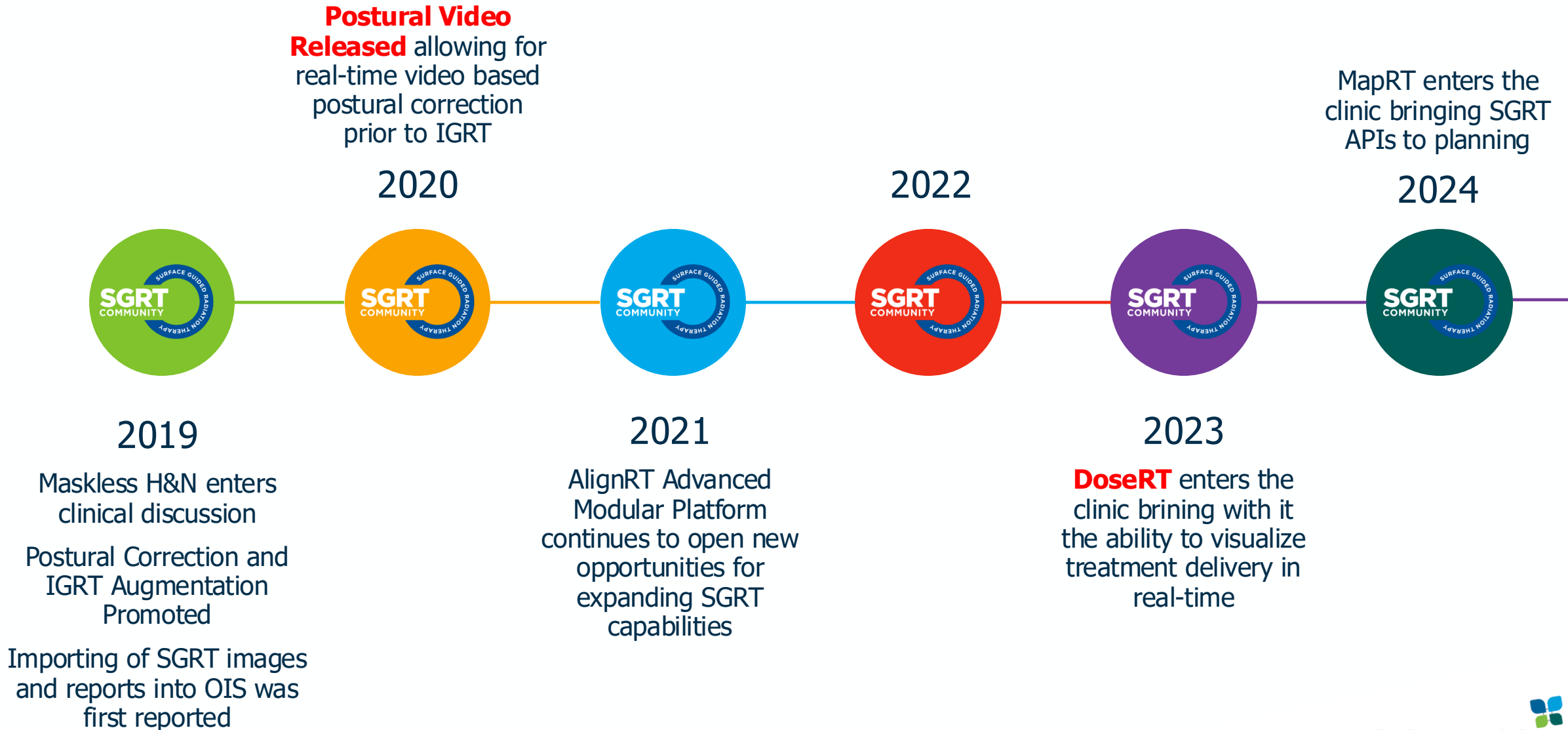


>3000 systems world-wide  
...SGRT = "standard of care"



☆☆☆☆  
**AMERICA'S  
BEST  
HOSPITALS**  
FOR  
CANCER CARE  
2025  
**Newsweek**  
statista

100% of "top 20 hospitals in USA for cancer" have alignrt®



Beam Guide  
alignrt® version 8  
2026



2025



**Beam Guide™**

# The Radiation Oncology Workflow



**SIM**



**PLAN**

**alignrt<sup>®</sup>**



**TREAT**

**dosert<sup>™</sup>**  
*Powered by BeamSite<sup>®</sup>*

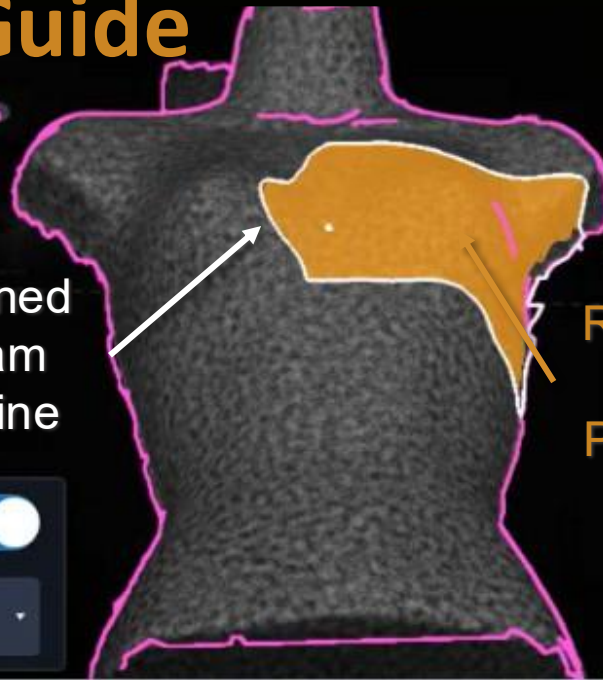
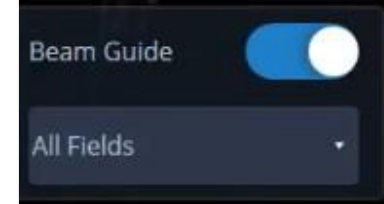


**DOSE**

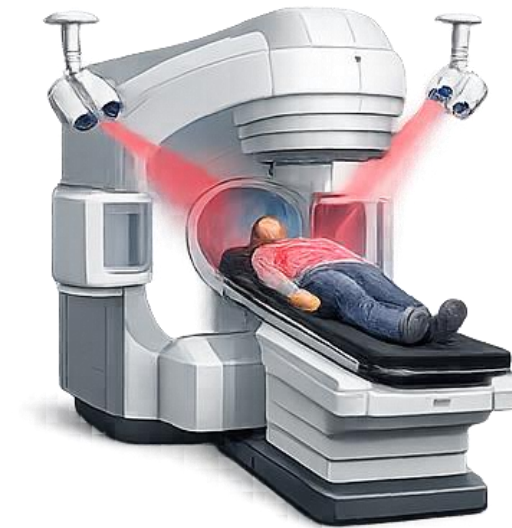
# Beam Guide

Planned  
Beam  
Outline

Real Time  
Beam  
Projection



alignrt®



TREAT

dosert™  
Powered by BeamSite®



DOSE

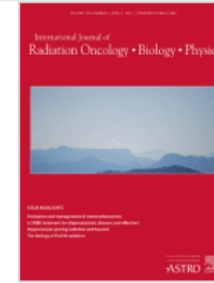


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## Initial Clinical Experience of Cherenkov Imaging in External Beam Radiation Therapy Identifies Opportunities to Improve Treatment Delivery

[Lesley A. Jarvis, MD, PhD](#) \* [✉](#) · [Rachael L. Hachadorian, MS](#) † · [Michael Jermyn, PhD](#) † · ... · [Philip E. Schaner, MD, PhD](#) \* · [Bassem I. Zaki, MD](#) \* · [Brian W. Pogue, PhD](#) † ... [Show more](#)



**2021**  
**64 patients**

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**2021**  
**64 patients**



BASIC ORIGINAL REPORT · Volume 13, Issue 1, P71-81, January-February, 2023

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## One Year of Clinic-Wide Cherenkov Imaging for Discovery of Quality Improvement Opportunities in Radiation Therapy

[Daniel A. Alexander, PhD](#) <sup>a,1</sup> [Savannah M. Decker, BS](#) <sup>a,b,1</sup> · [Michael Jermyn, PhD](#) <sup>a,b</sup> · ... · [Brian W. Pogue, PhD](#) <sup>a,b,f</sup> · [David J. Gladstone, ScD](#) <sup>a,c</sup> · [Lesley A. Jarvis, MD, PhD](#) <sup>c,d</sup> ... [Show more](#)

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**2023**  
**622 patients**

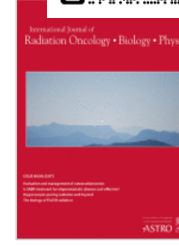
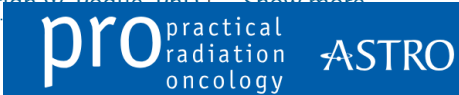


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**2021**  
**64 patients**

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## One Year of Clinic-Wide Cherenkov Imaging for Discovery of Quality Improvement Opportunities in Radiation Therapy

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**2023**  
**622 patients**

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## A Review of Cherenkov Imaging for Real-Time Verification in Radiation Therapy

[Adi Robinson, PhD](#) <sup>a</sup> [Michael Tallhamer, MS <sup>b</sup> · \[Florian Stieler, PhD\]\(#\) <sup>c,d</sup>](#)



**2026**  
**Routine use**



# Beam Guide™

Preparation Treatment

|| Lt Breast ISO 1

👤 SGRT BODY



## Beam Guide:

- Show where radiation will be delivered, including before beam-on.
- Real time **projected** and **planned** beam.
- A **'complete setup'**: Patient & beam

Reference

Beam Guide

All Fields

0.58

-0.58

Coaching

Surface Deformation **Video**

Planned Beam Outline

Real Time Beam Projection

Beam Guide

All Fields



WITH REAL FRUIT JUICES  
0g ADDED SUGAR

DAL  1932

**SANPELLEGRINO**  
ITALIAN ZEST FOR LIFE

**CIAO!**  
PEACH

SPARKLING WATER  
WITH A BLEND OF PEACH AND CITRUS JUICES

**CIAO!**  
**PEACH**

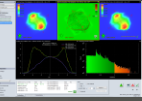


**SPARKLING WATER**  
**WITH A BLEND OF PEACH AND CITRUS JUICES**

# Beam Guide™



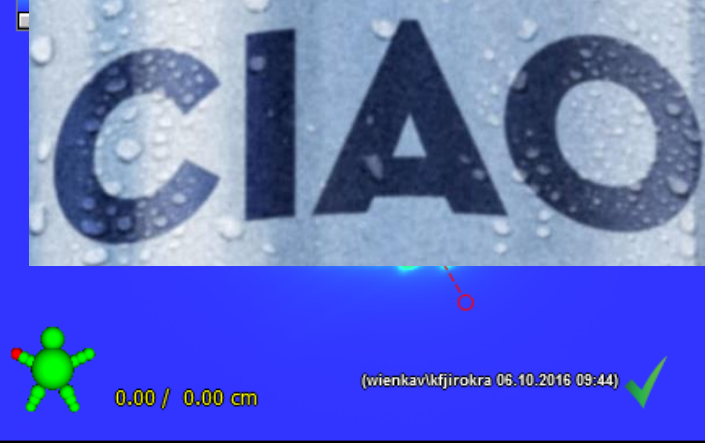
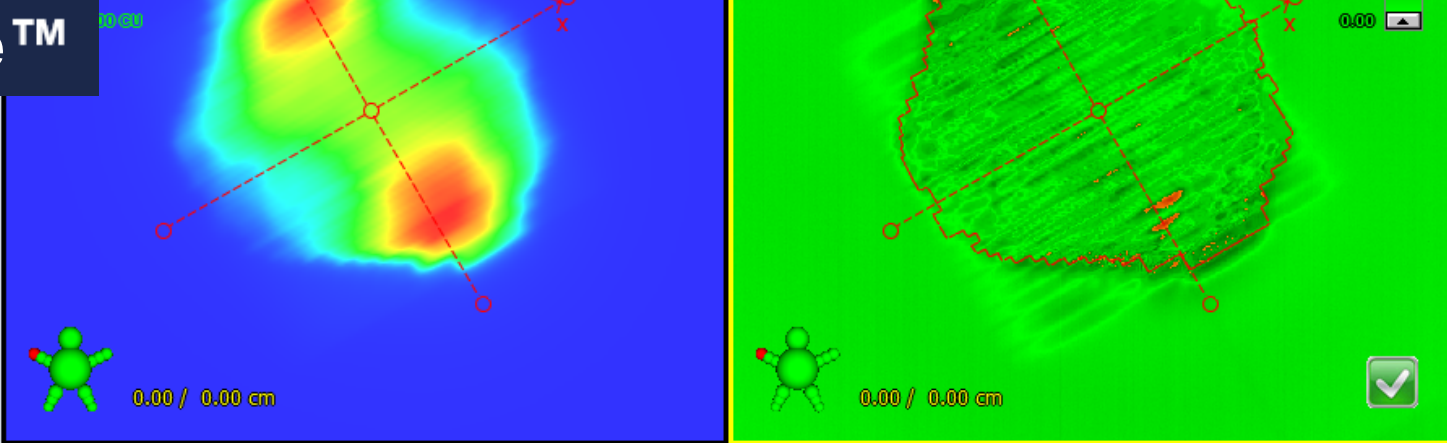
o r r u  
m r e t  
p a a l  
l d i i  
e i a n  
t a e  
e t  
d e  
d



Completed Irradiated Area Outline

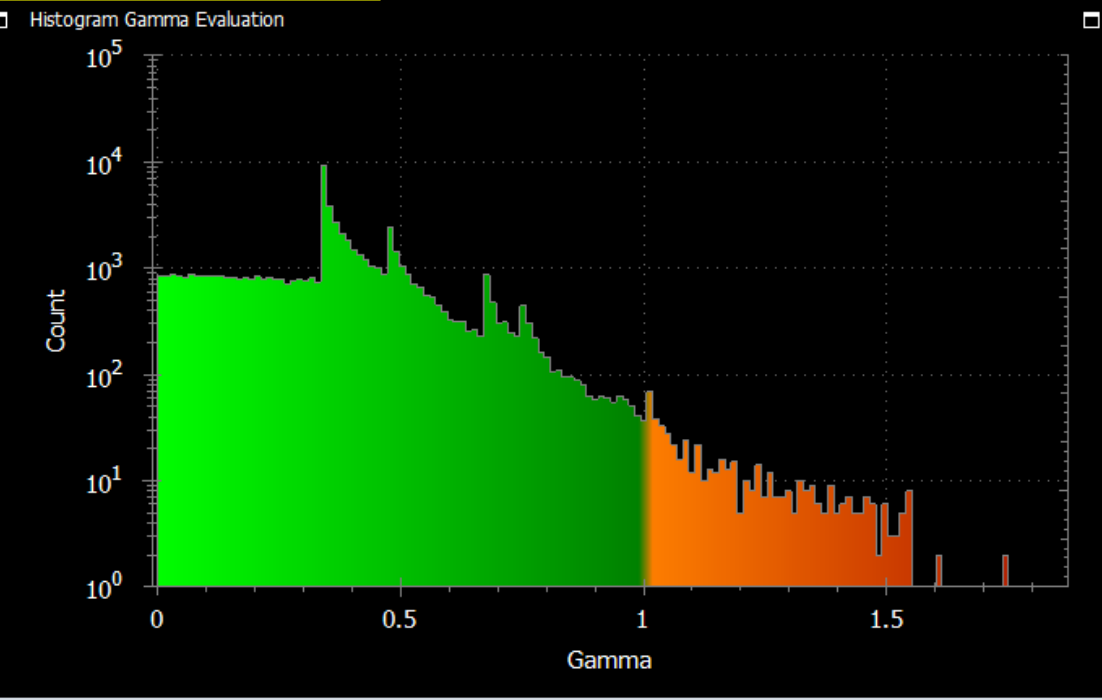
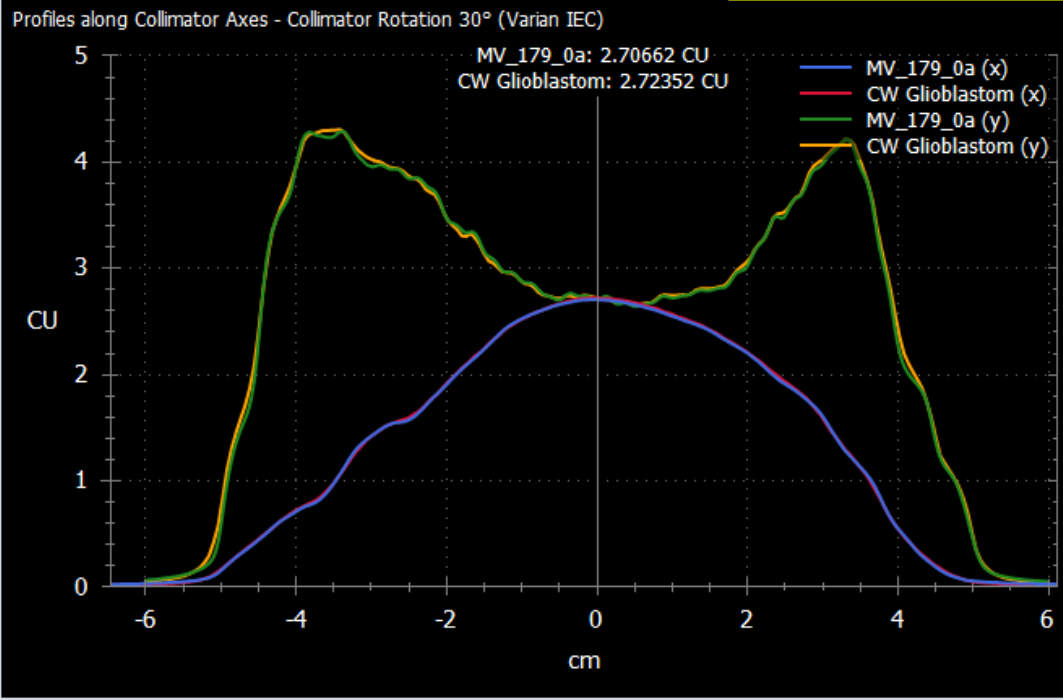
# Beam Guide™

Analysis: Mi 05.10.2016  
 Analysis: Do 06.10.2016



- Visibility Configuration**
- Reference Image
  - Graticule
  - Field Outline
  - Isodose Lines
- Color Wash ▼

- Display Mode**
- Predicted and Portal Dose
  - Portal Dose only
  - Predicted Dose only
  - Dose Difference
  - Gamma Evaluation



Gamma (1.0 %, 1.0 mm)	Value	Tol.	Abs. Dose Difference	Value	Tol.
Area Gamma < 1.0	99.1 %	97.0 %	Max. Dose Difference	0.33 CU	
Maximum Gamma	1.86		Avg. Dose Difference	0.03 CU	
Average Gamma	0.37		Area Dose Diff > 0.50 CU	0.0 %	
Area Gamma > 0.8	2.7 %		Area Dose Diff > 0.80 CU	0.0 %	
Area Gamma > 1.2	0.3 %				

**Passed**

ROI ▼

None     User defined  
 Field +  
 MLC CIAO + 0.00 cm Options...  
 Threshold Perform Analysis



Left Breast ISO 1

CT SIM External

ROI1

VRT<sub>cm</sub> -0.03

LNG<sub>cm</sub> -0.01

LAT<sub>cm</sub> 0.02

MAG<sub>cm</sub> 0.04

YAW° -0.5

ROLL° -0.3

PITCH° -1.4

Reference Treatment Couch 0.0° Beam Control

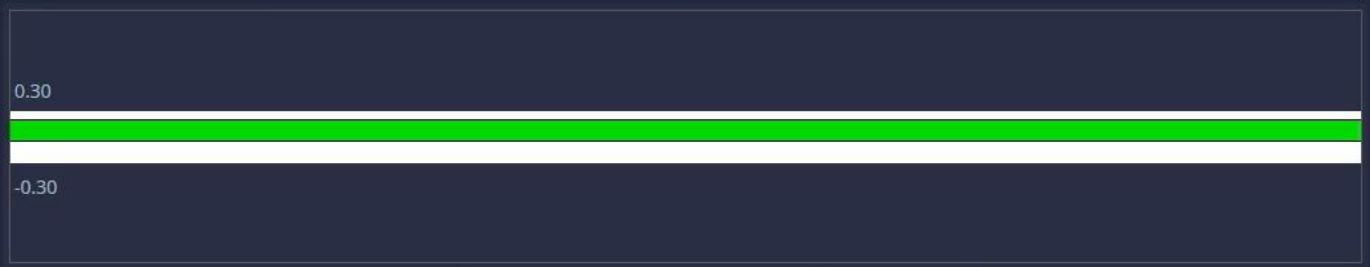


Beam Guide

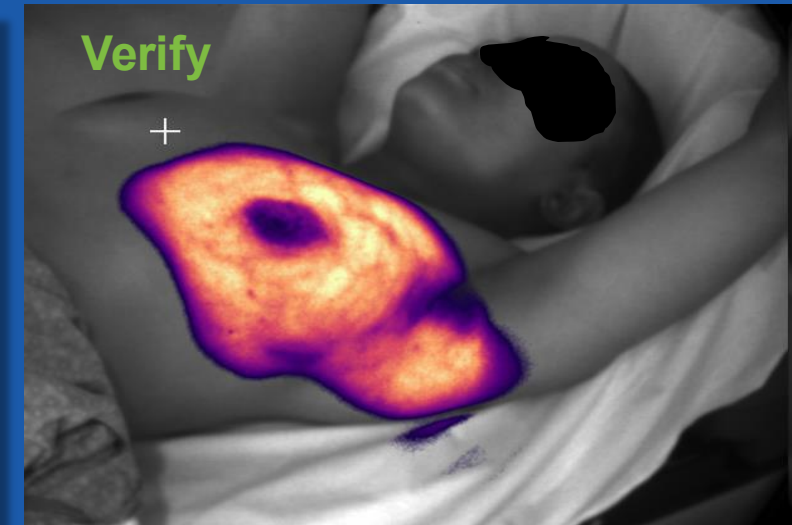
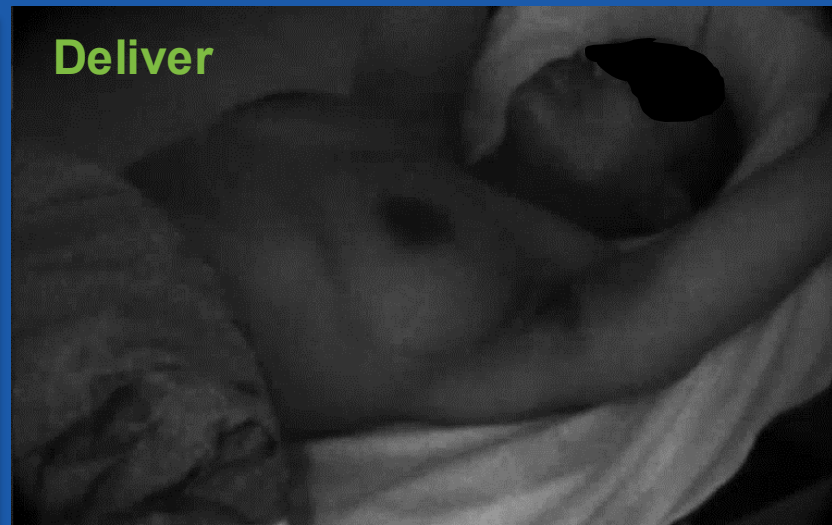
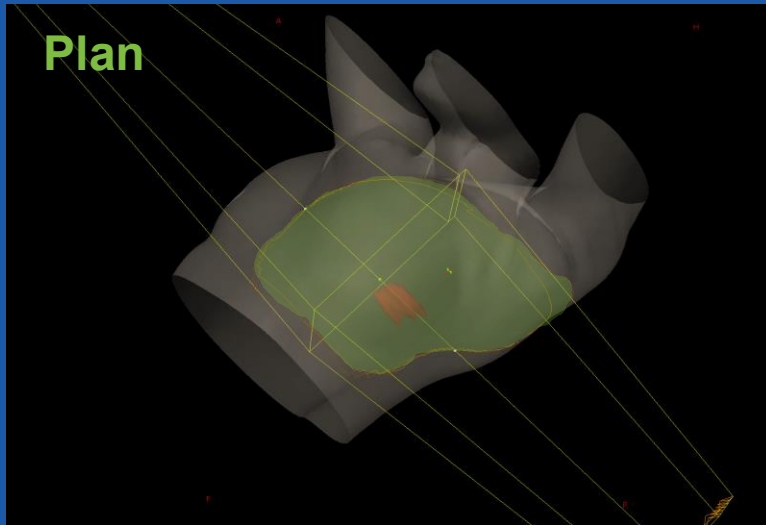
All Fields

Plan View

- Projection
- Outline



# Then Why Would I Need BeamGuide With A Light Field



- For dynamic deliveries the light field doesn't illuminate the entire irradiated area.
- Tools like DoseRT will provide this information in real-time but it is often desirable to know ahead of time if the patient's anatomy is posing a unique challenge

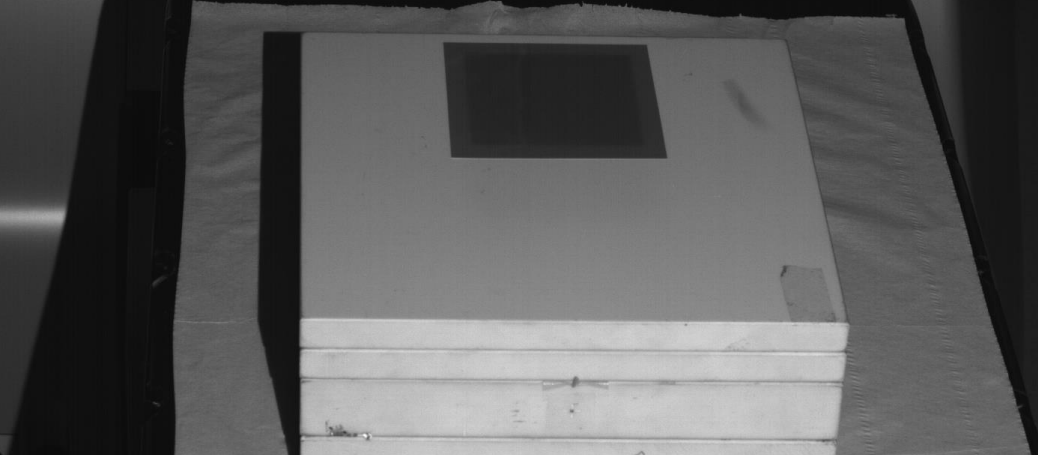
# Validation of prototype



# Validation of prototype



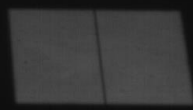
**GafChromic film (irradiated)**



**Beam Guide projection  
[mask]**



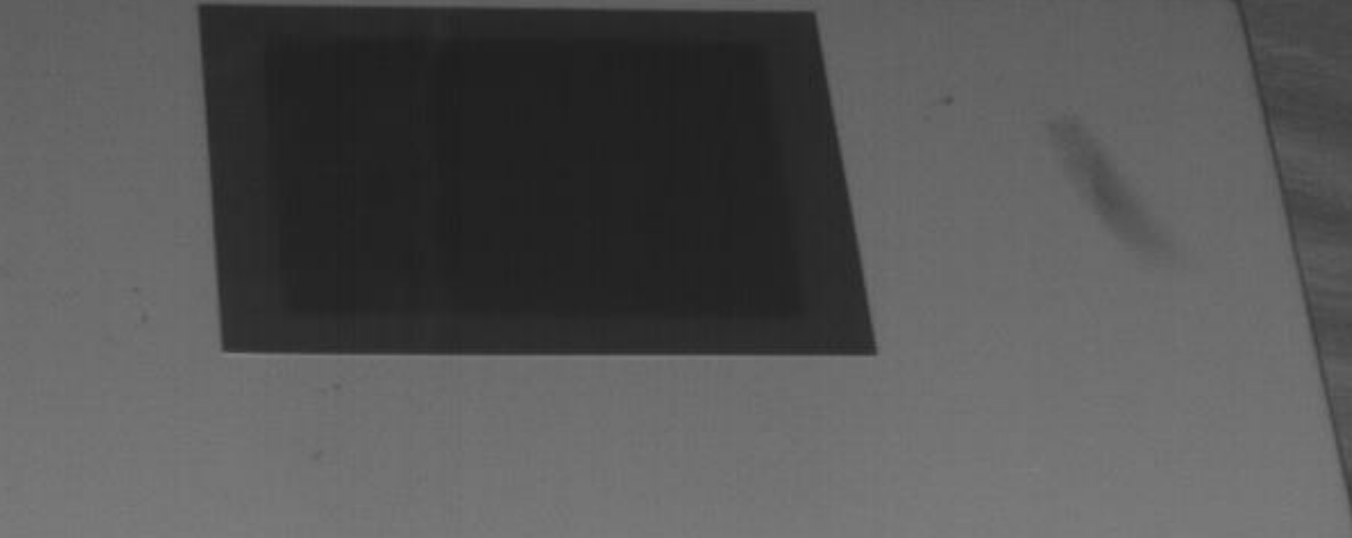
**Light field**



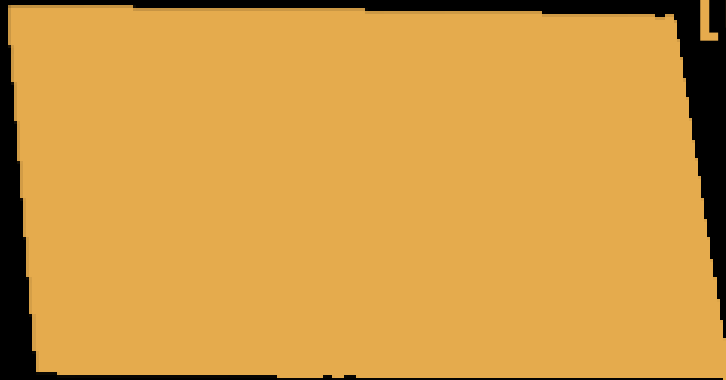
**Light field [mask]**



**GafChromic film (irradiated)**



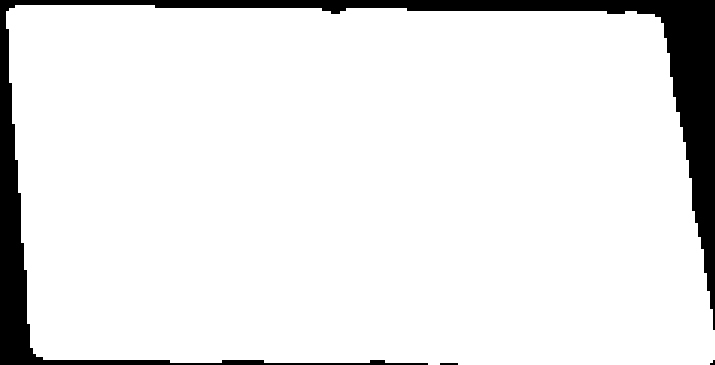
**Beam Guide projection  
[mask]**



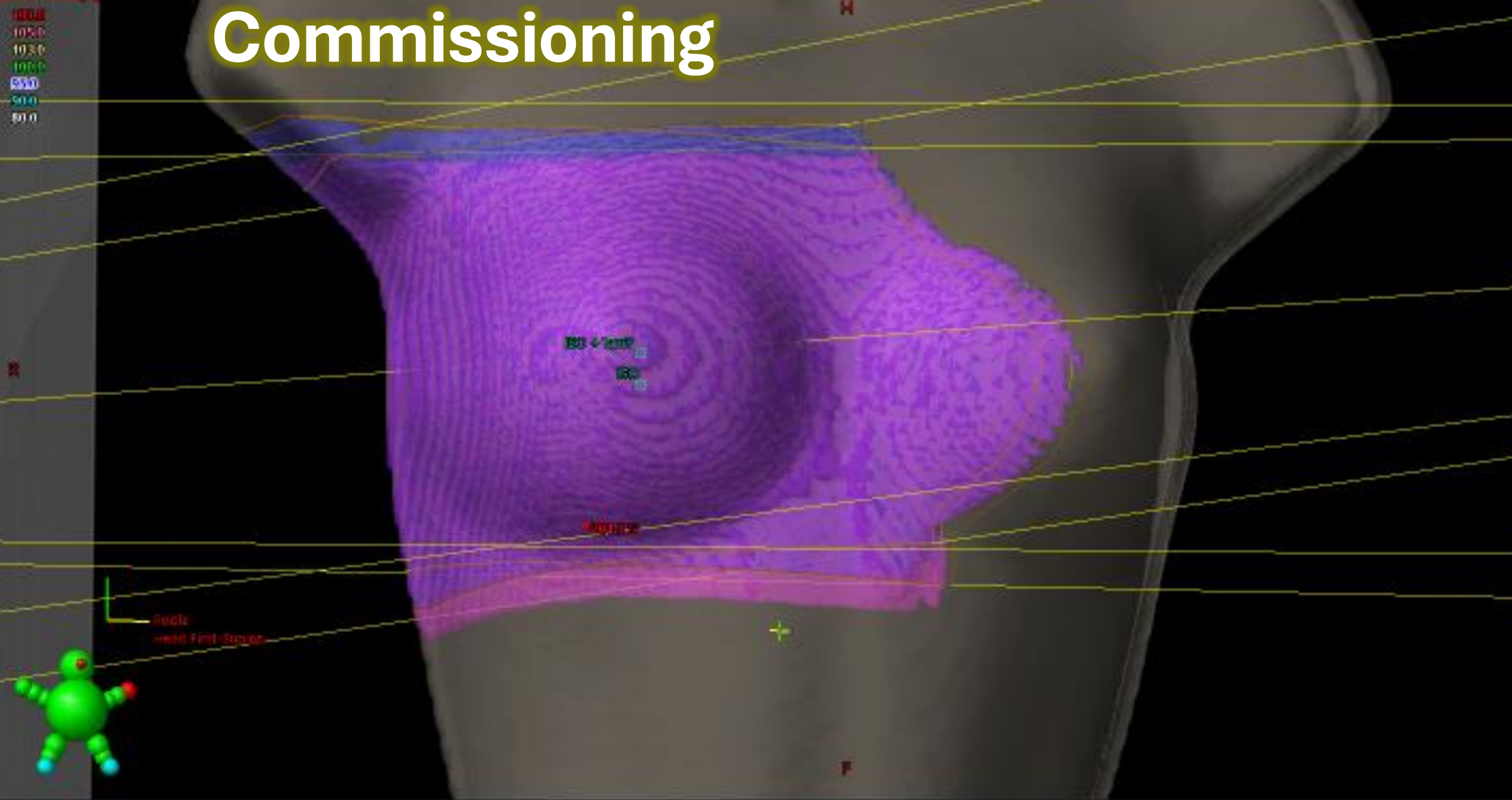
**Light field**



**Light field [mask]**



# Commissioning



Physical Goals	Optimization Objectives	Dose Statistics	Reference Points	Calculation Models	Plan Sum
			Spine Rts	Coll Rts	Touch Rts
			Field 1	X1	P2
			Field 1	Y1	P2

# Commissioning

-1.08



0.04



-0.07



1.09



0.2



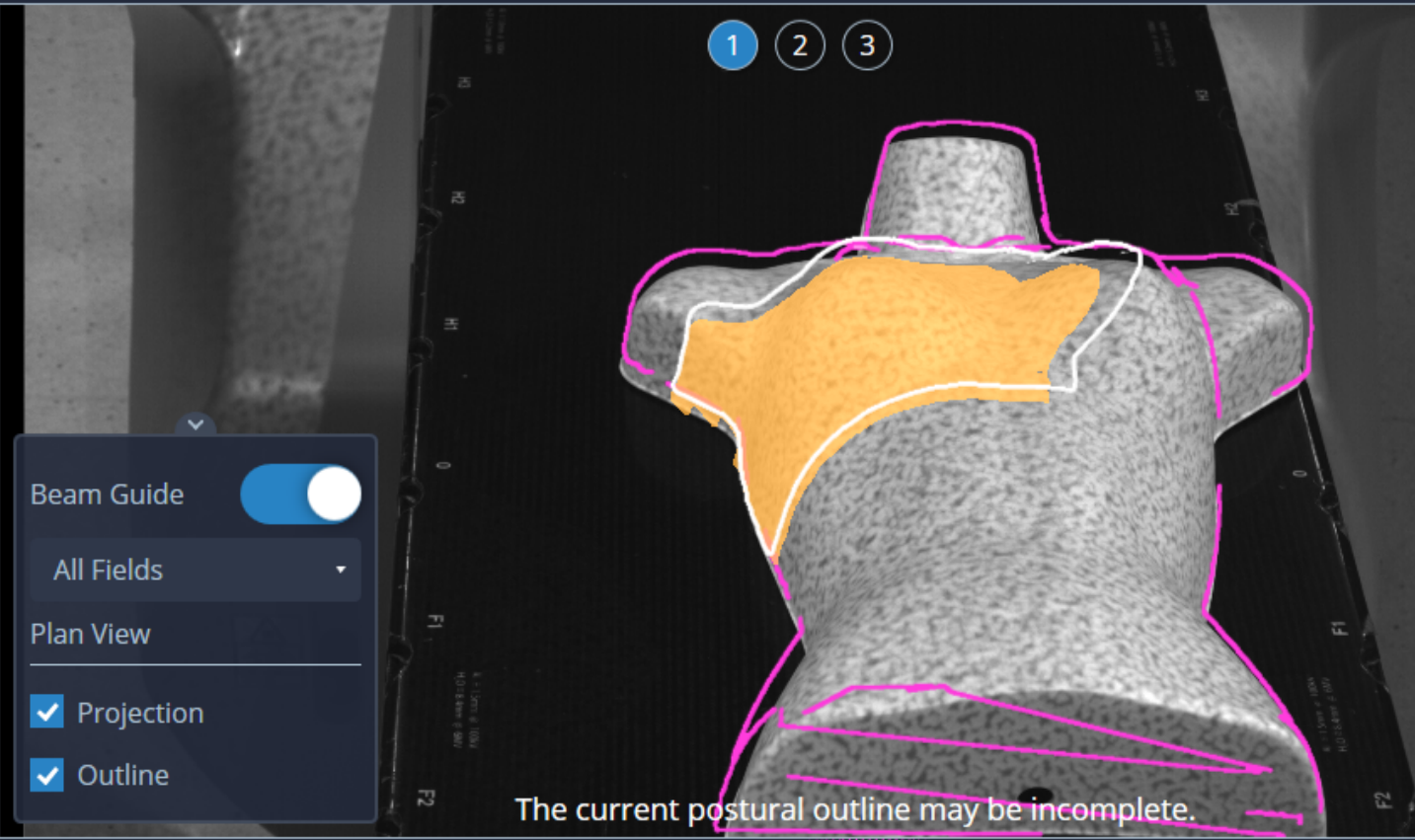
-0.3



0.6



Reference Treatment Couch 0.0° Send to Couch Beam Control

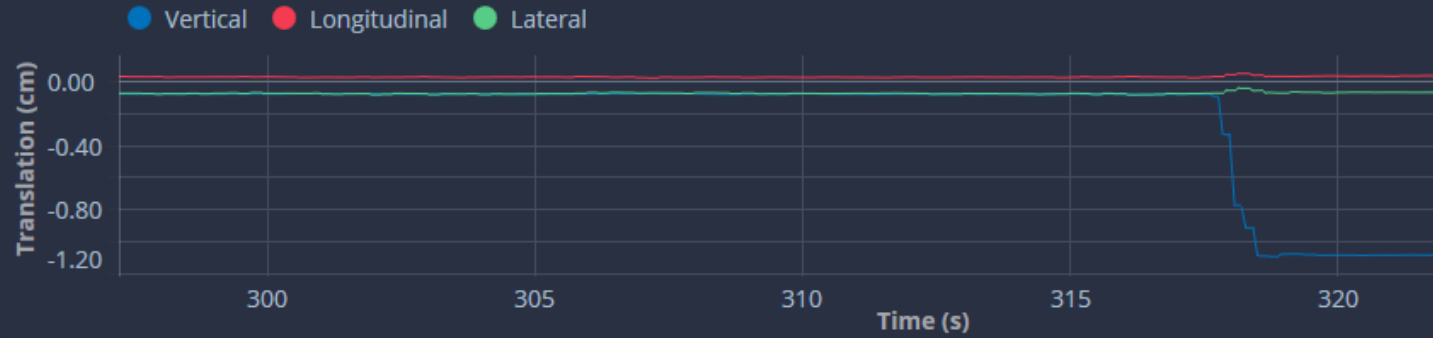


Beam Guide

All Fields

Plan View

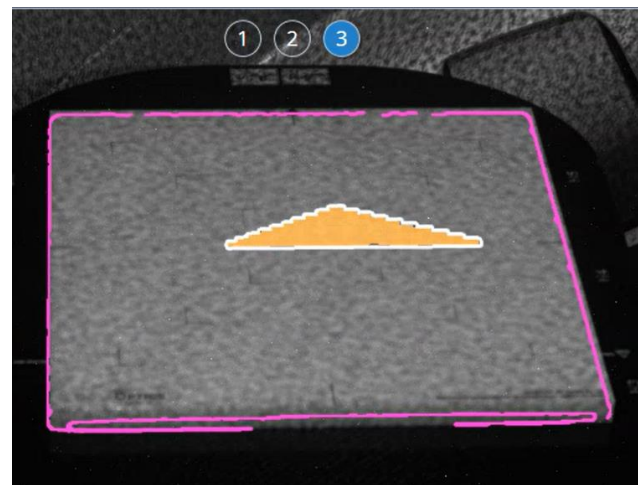
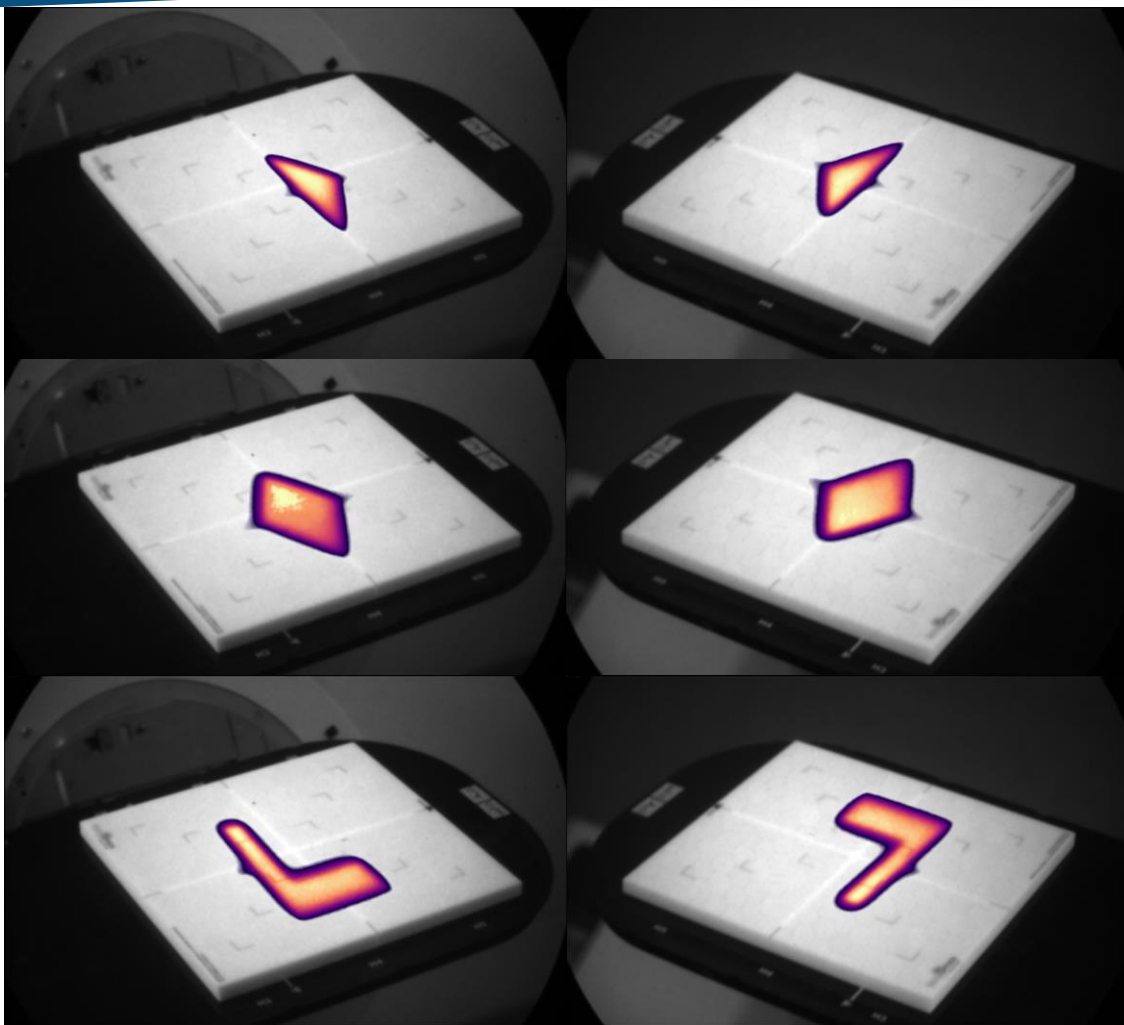
- Projection
- Outline



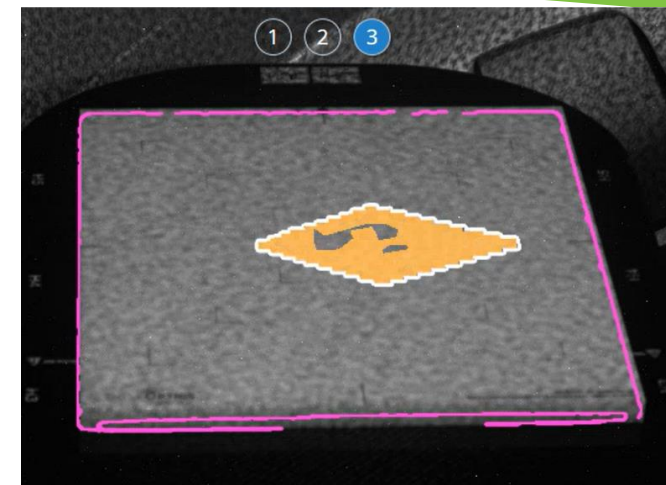
Translations

Surface Deformation Video

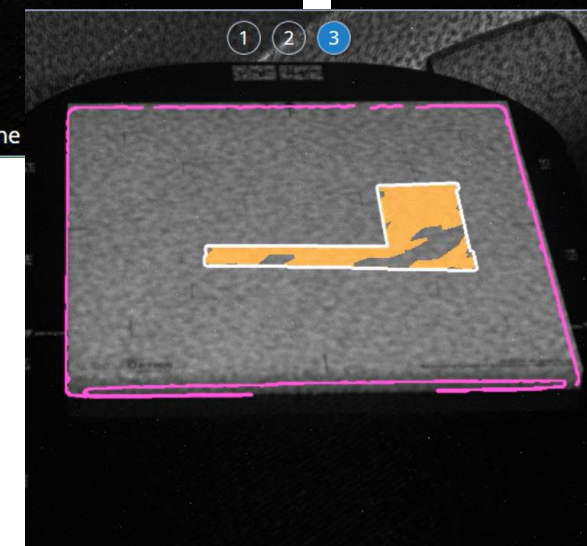
# Beam Guide™ and DoseRT



The current postural outline



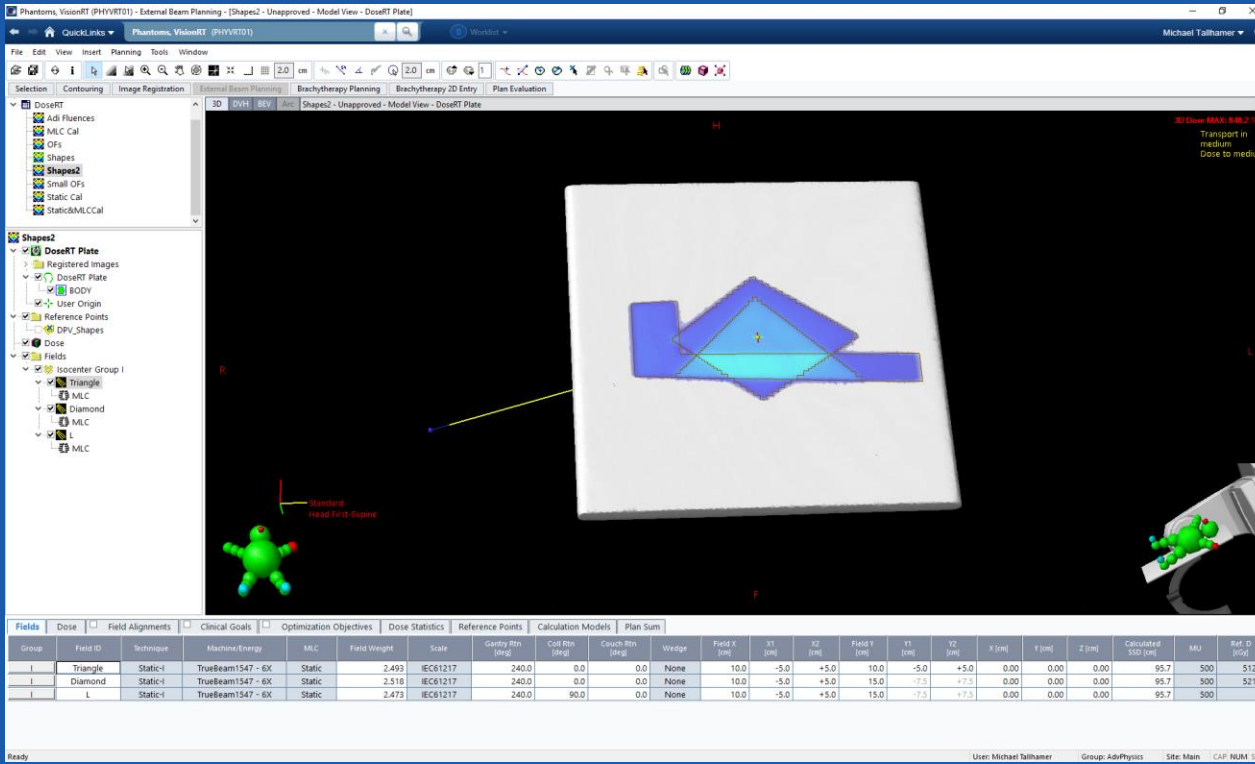
ral outline may be incomplete.



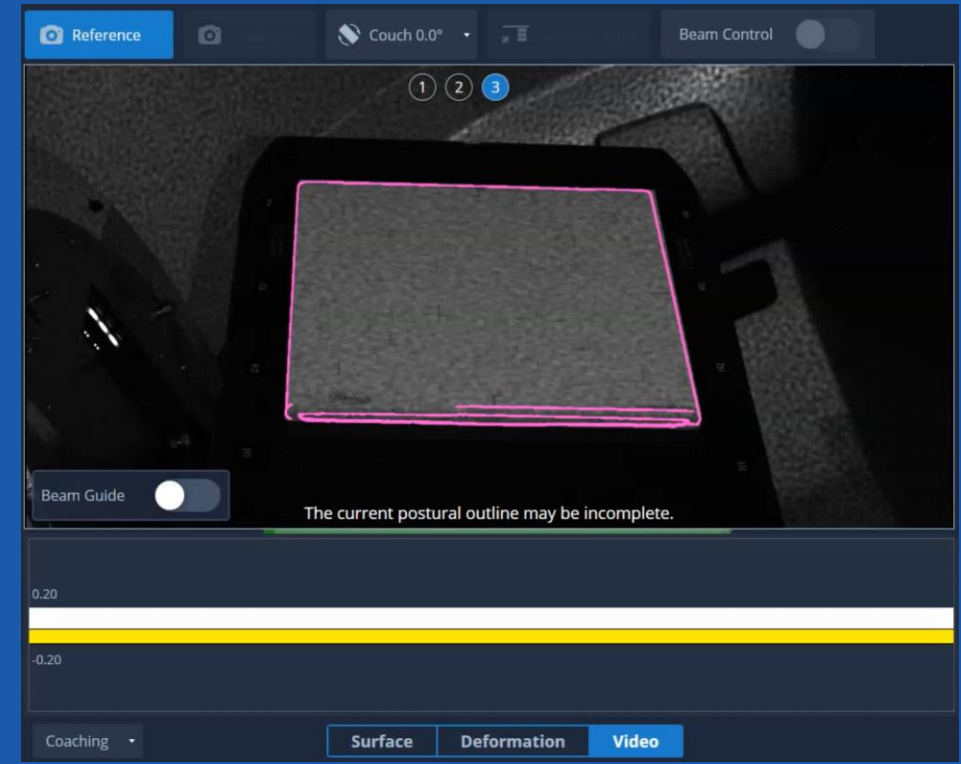
The current postural outline may be incomplete.

# Beam Guide's Synergy with DoseRT

## Treatment Planning



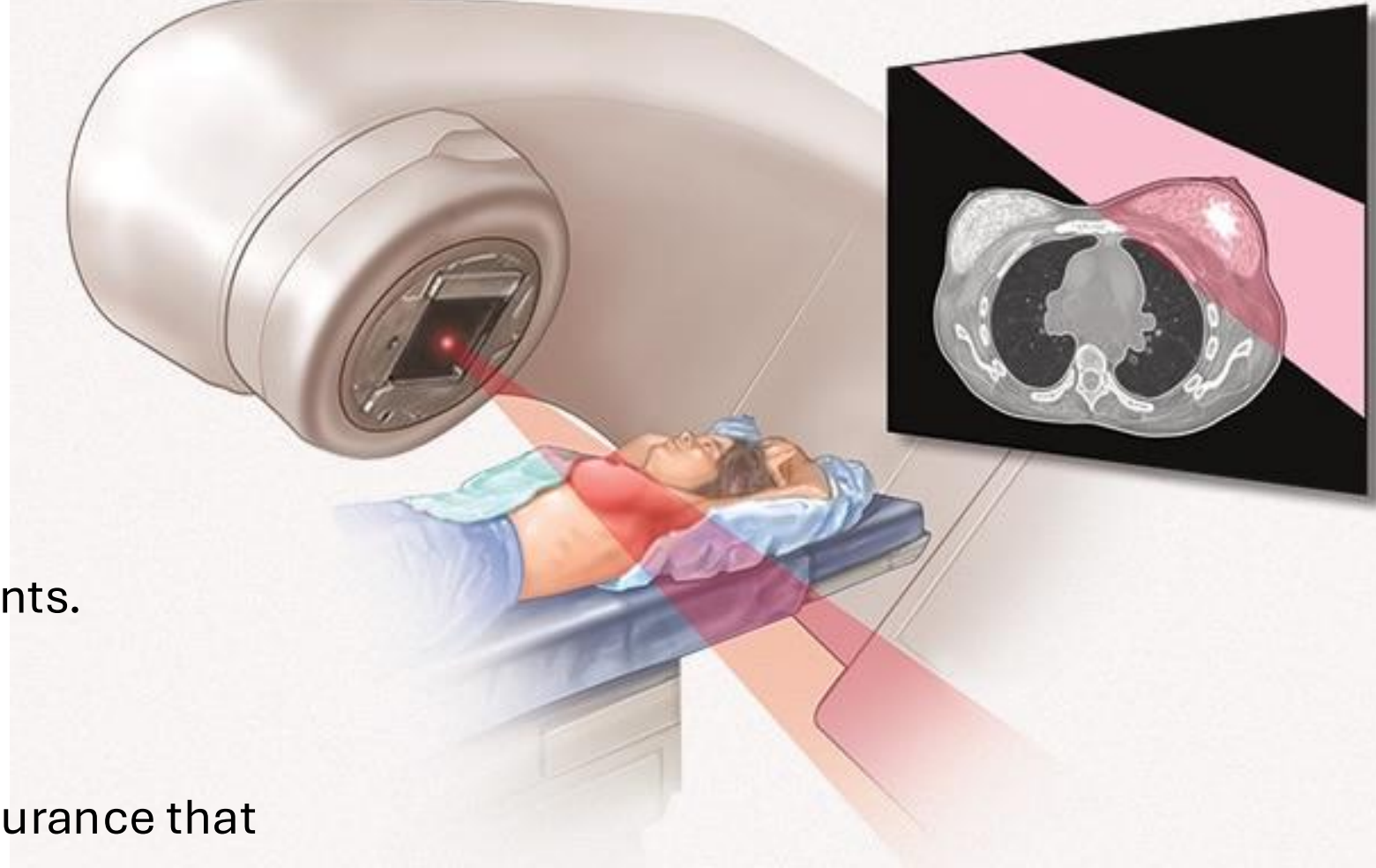
## Live Setup w/ BeamGuide



# Case studies



University Hospitals Dorset  
NHS Foundation Trust



**Scope:** Tested on ~20–30 breast patients.

**Techniques:** VMAT, IMRT, tangents, breath hold, IMC, SCF

**Primary benefit:** Provides team reassurance that dose is not being delivered to unintended areas, and verifies BH

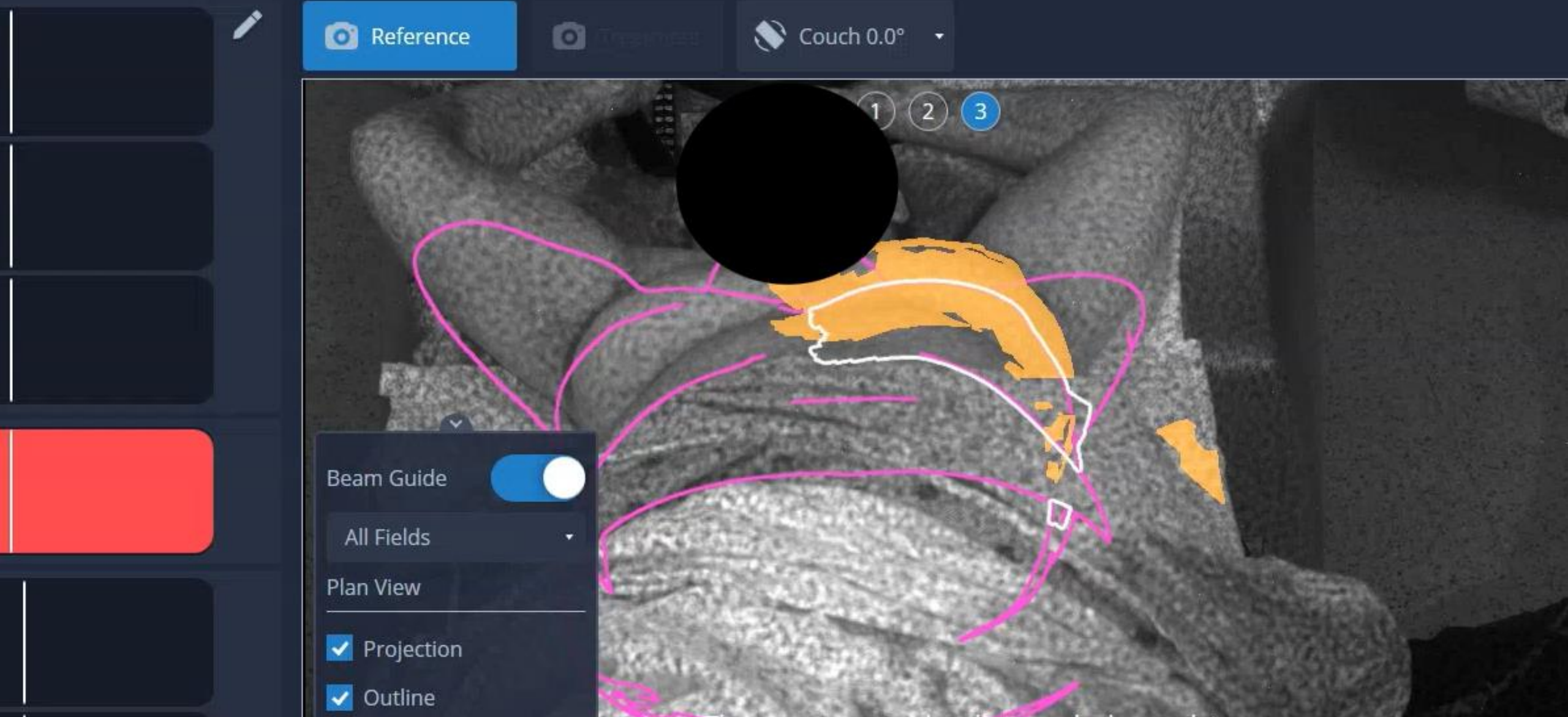
**Operational note:** Best to switch off once extending imaging arms and after any post-couch shift.

**Bolus use:** If bolus causes issues, use a white outline instead of the orange projection.

**Key case studies:** Arm position; stray dose to chin.

# Case study: error in arm position detected

Video credit, for illustration:  
Adi Robinson  
– Advent Health Florida



# Case study: exit dose to chin

Left Breast+SCF ISO 1

CT SIM External

ROI1

VRT<sub>cm</sub> **-0.05**

LNG<sub>cm</sub> **0.02**

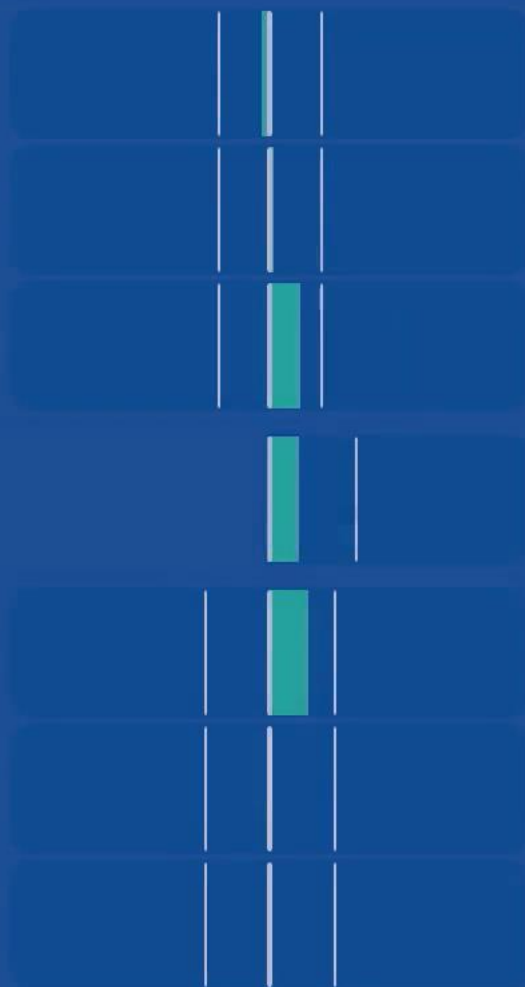
LAT<sub>cm</sub> **0.17**

MAG<sub>cm</sub> **0.18**

YAW<sup>°</sup> **1.8**

ROLL<sup>°</sup> **-0.0**

PITCH<sup>°</sup> **-0.0**



Reference Couch 0.0° Beam Control

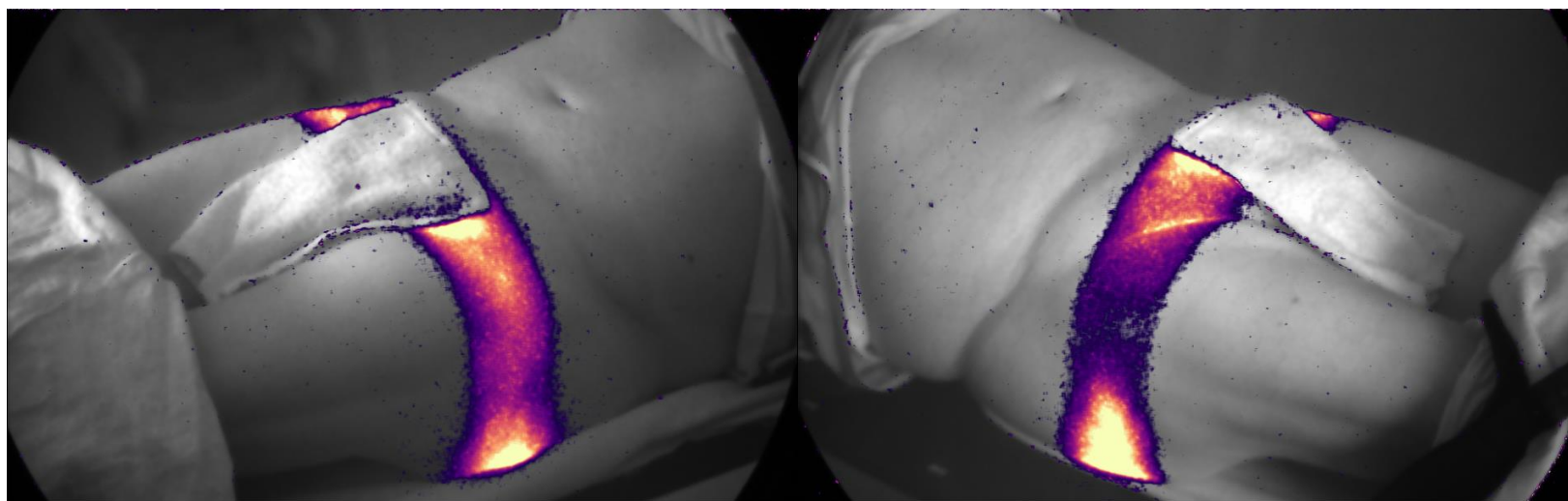
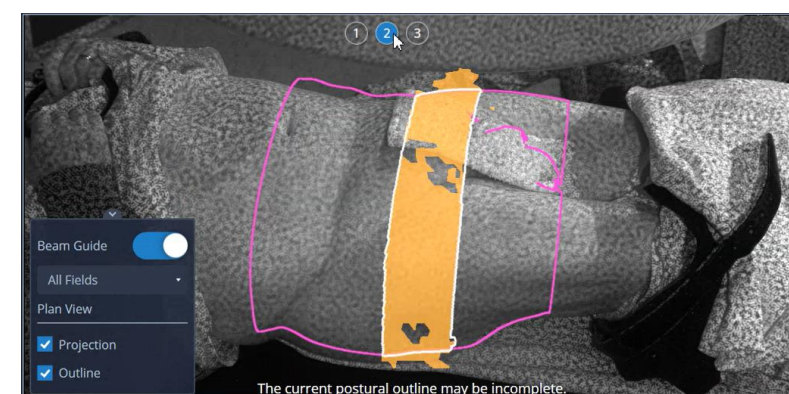
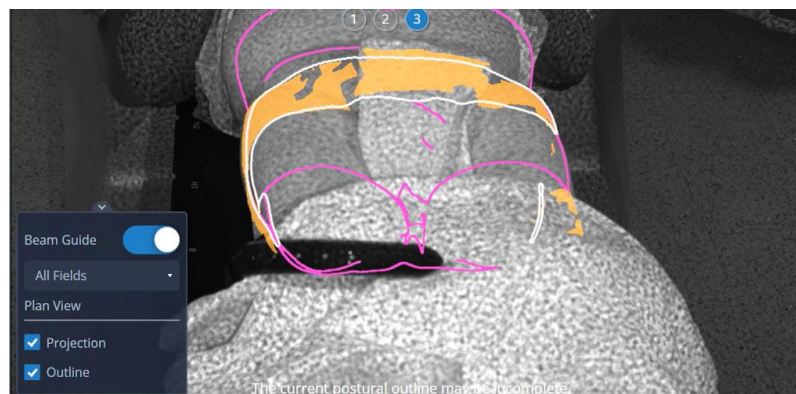
Beam Guide  All Fields  Plan View

Projection  Outline

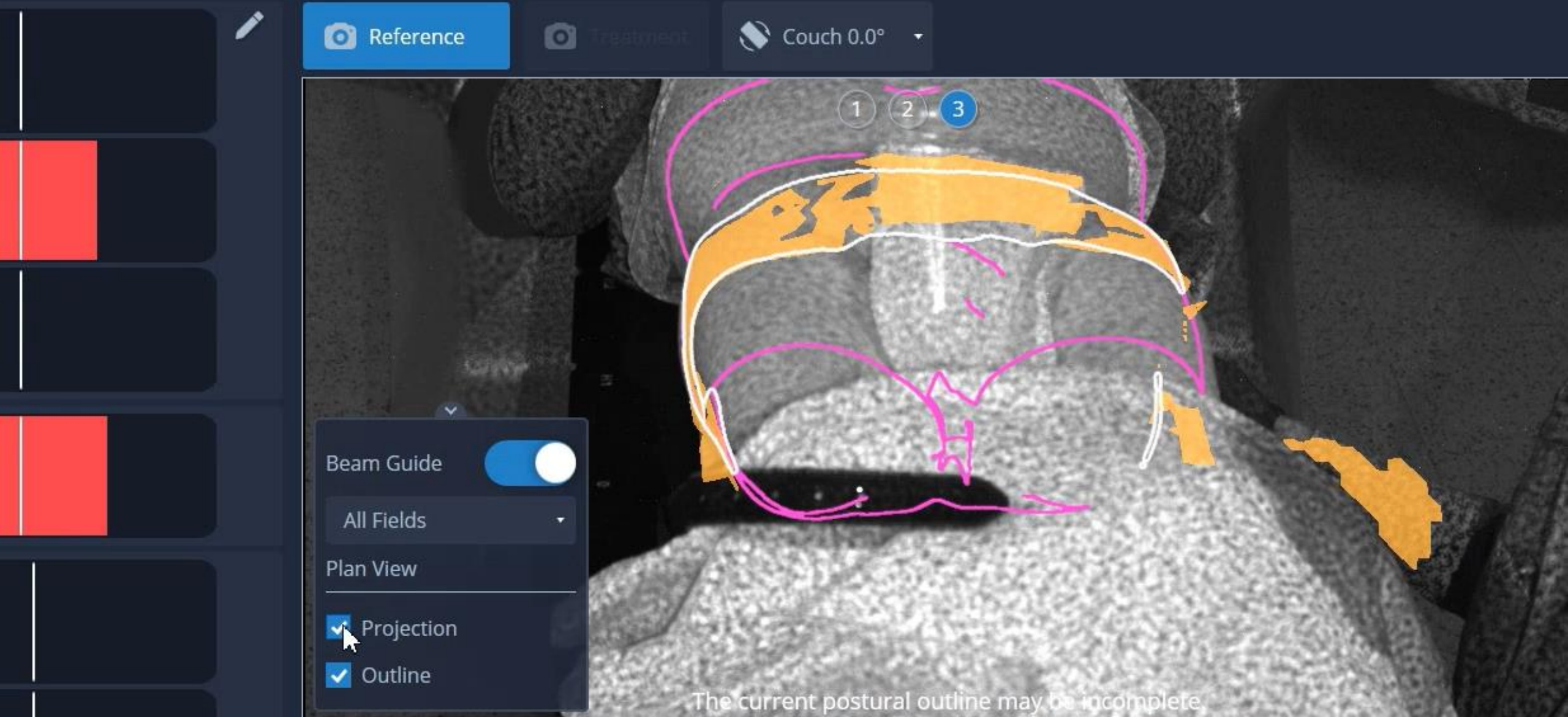
The current postural outline may be incomplete.

0.30  
-0.30

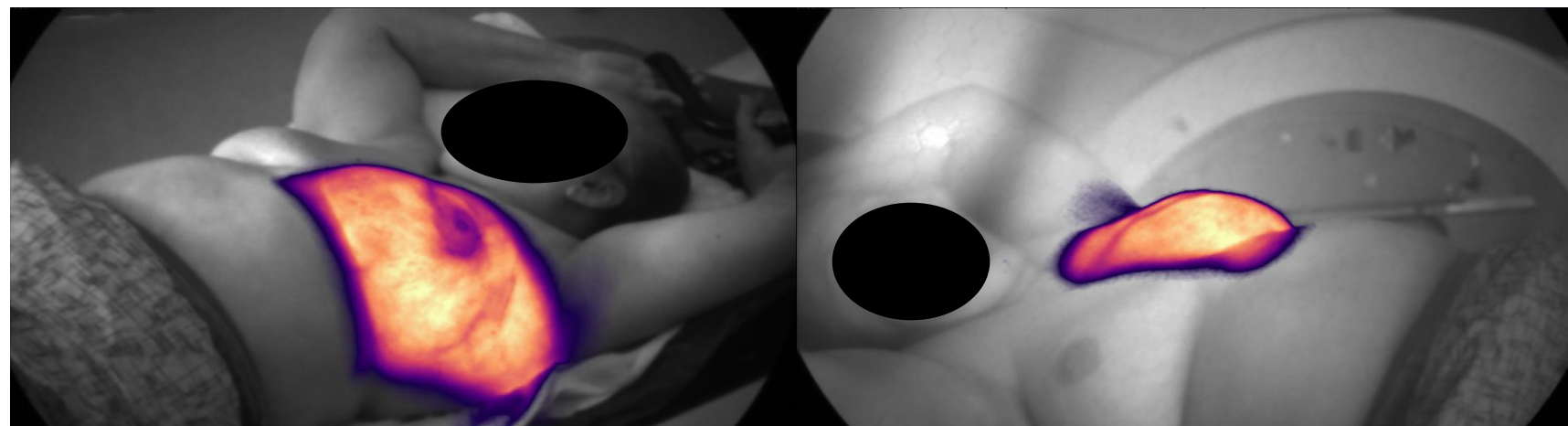
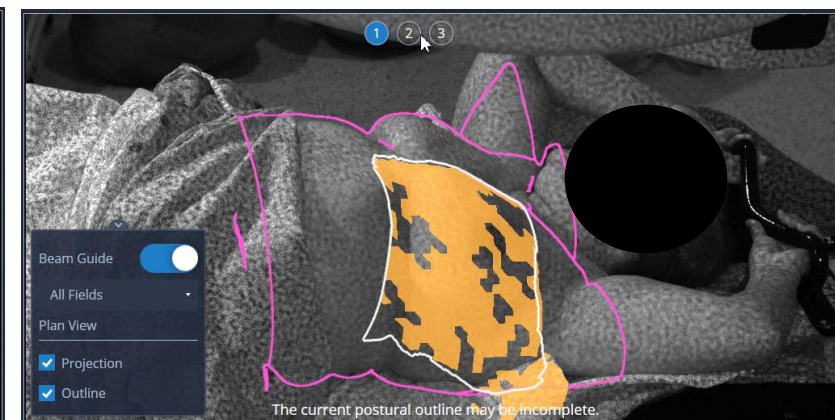
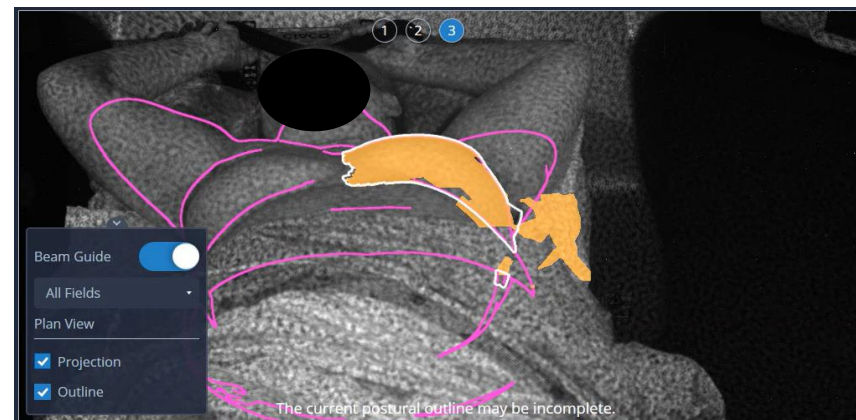
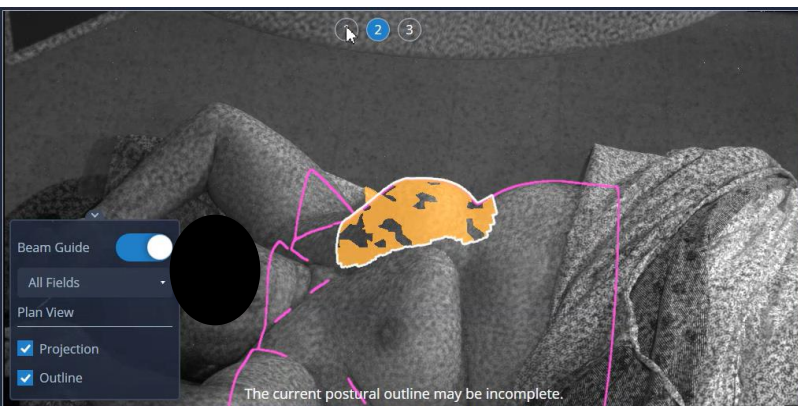
# Beam Guide™ Clinical Example: Pelvis



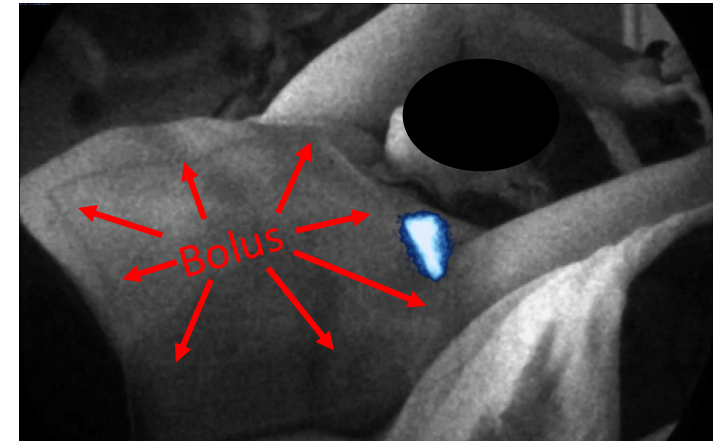
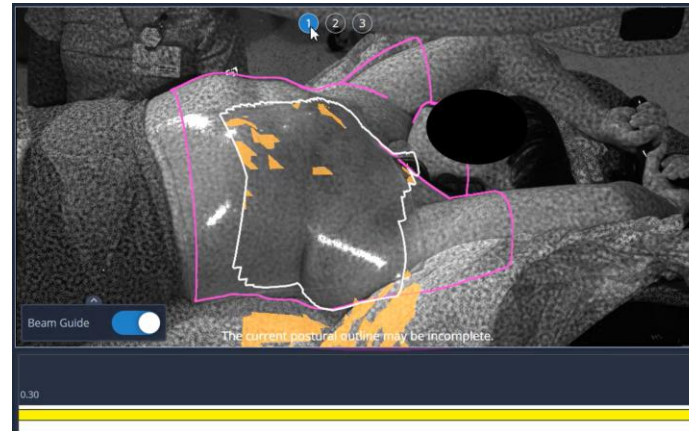
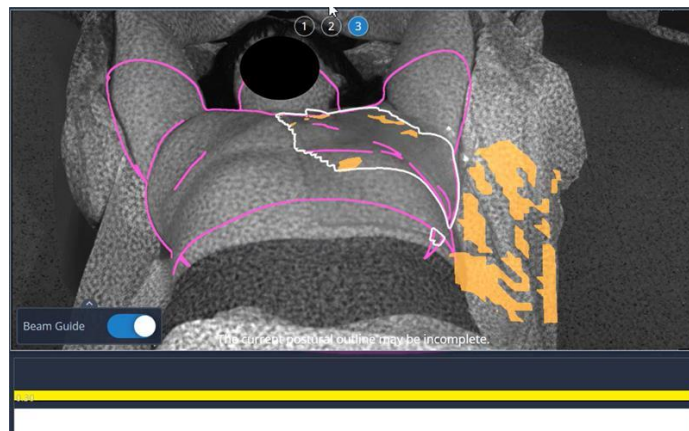
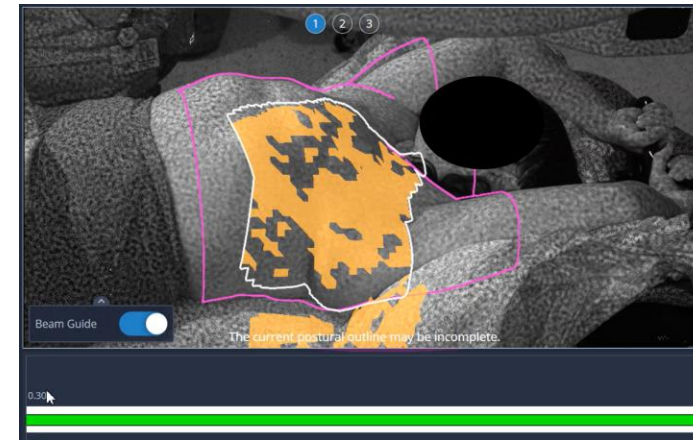
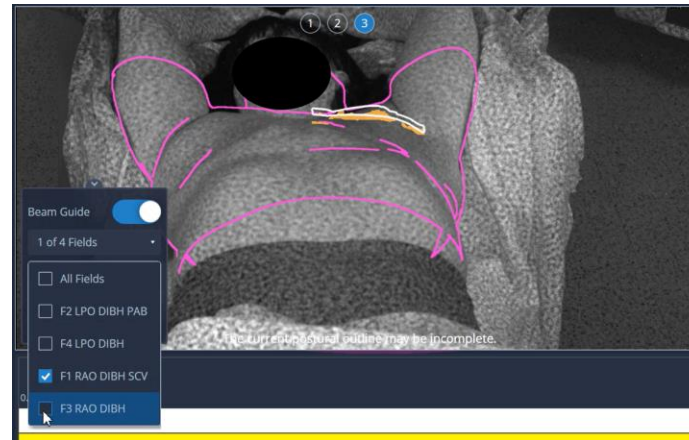
# Beam Guide™ Clinical Example: Pelvis



# Beam Guide™ Clinical Example DIBH Breast

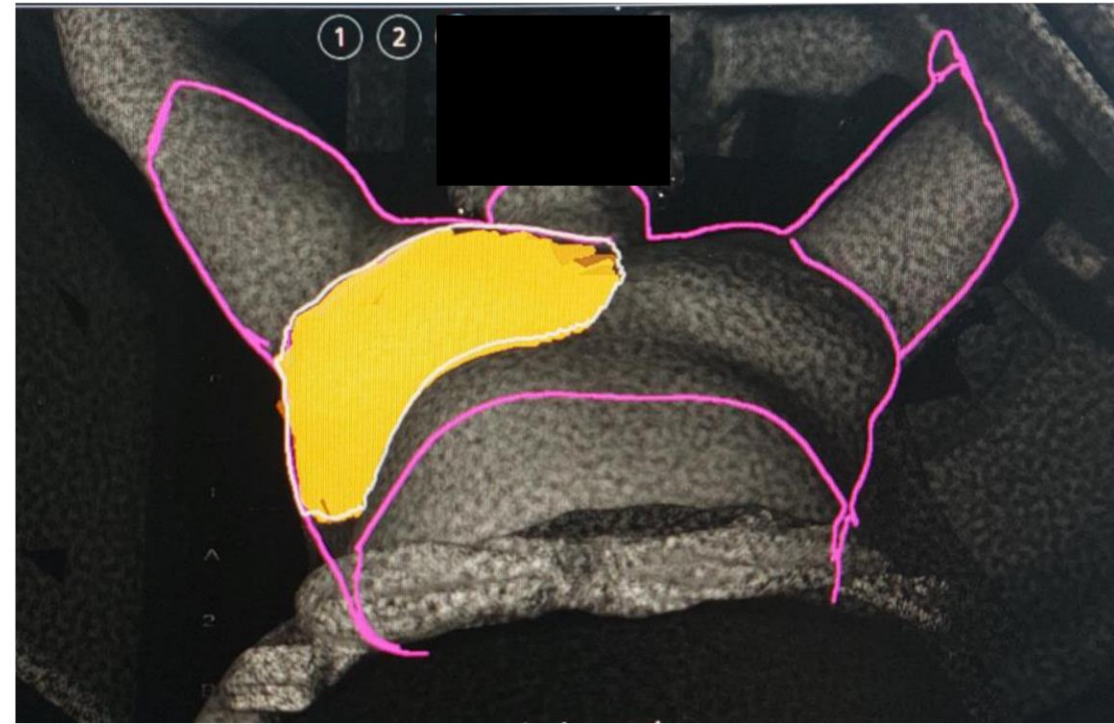
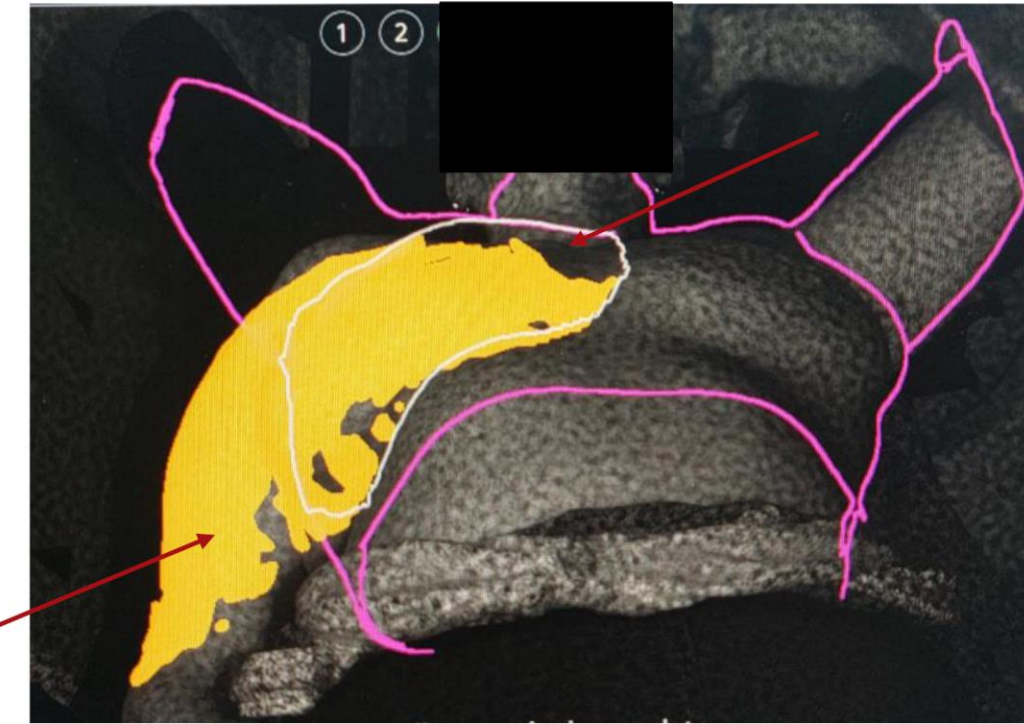


# Beam Guide™ Clinical Example: Breast DIBH with Bolus



# Patient 1: Right breast with tangential IMRT in free breathing (FB)

## Positioning procedure with SGRT and Beam Guide



Patient with lowered right arm

- Right arm receives light field/dose
- Less signal in central part of target volume

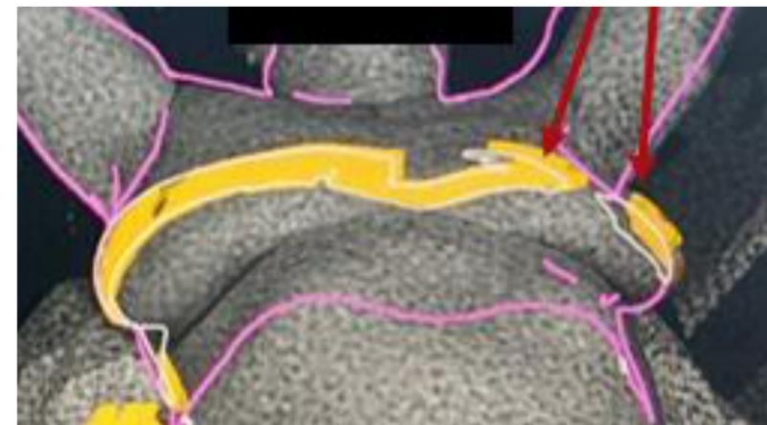
Patient in correct position



## Patient 2b: Right breast with tangential IMRT + VMAT Boost in FB

Beam Guide information for the partial VMAT boost plan.

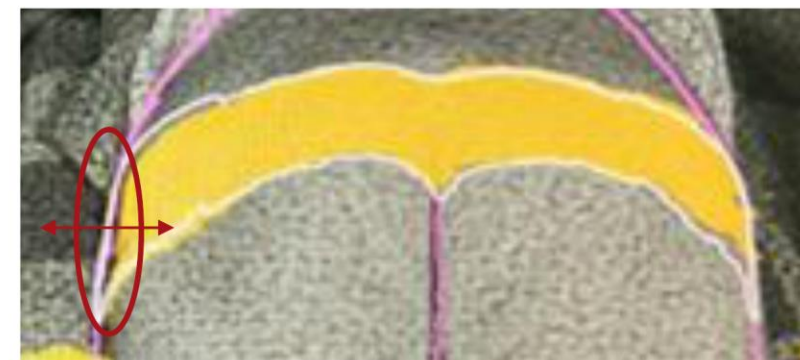
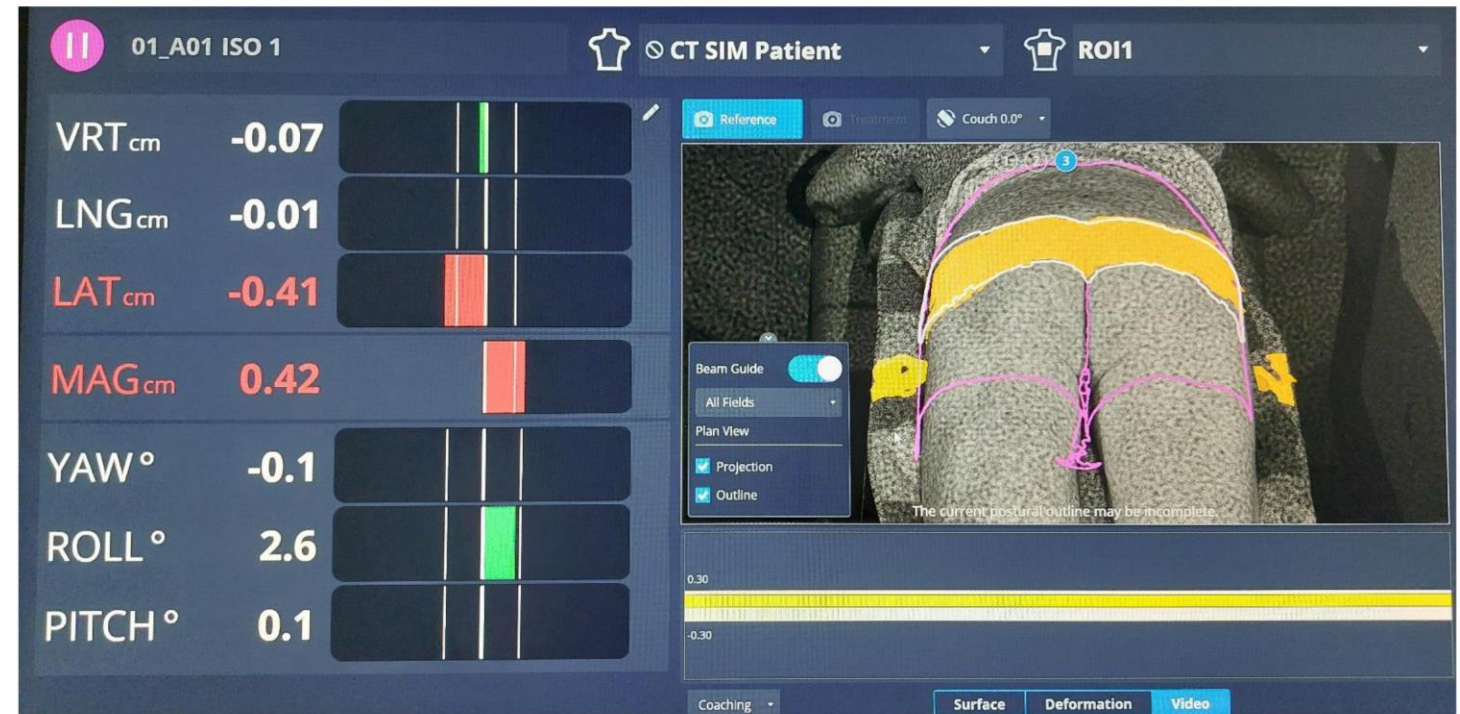
Roll =  $2.7^\circ$  → slight deviation in the contra lateral breast



## Patient 3: Prostate VMAT

2 full VMAT arcs, patient in prone position.

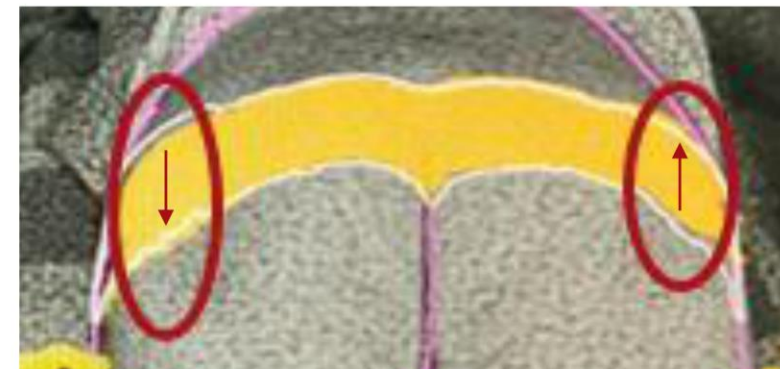
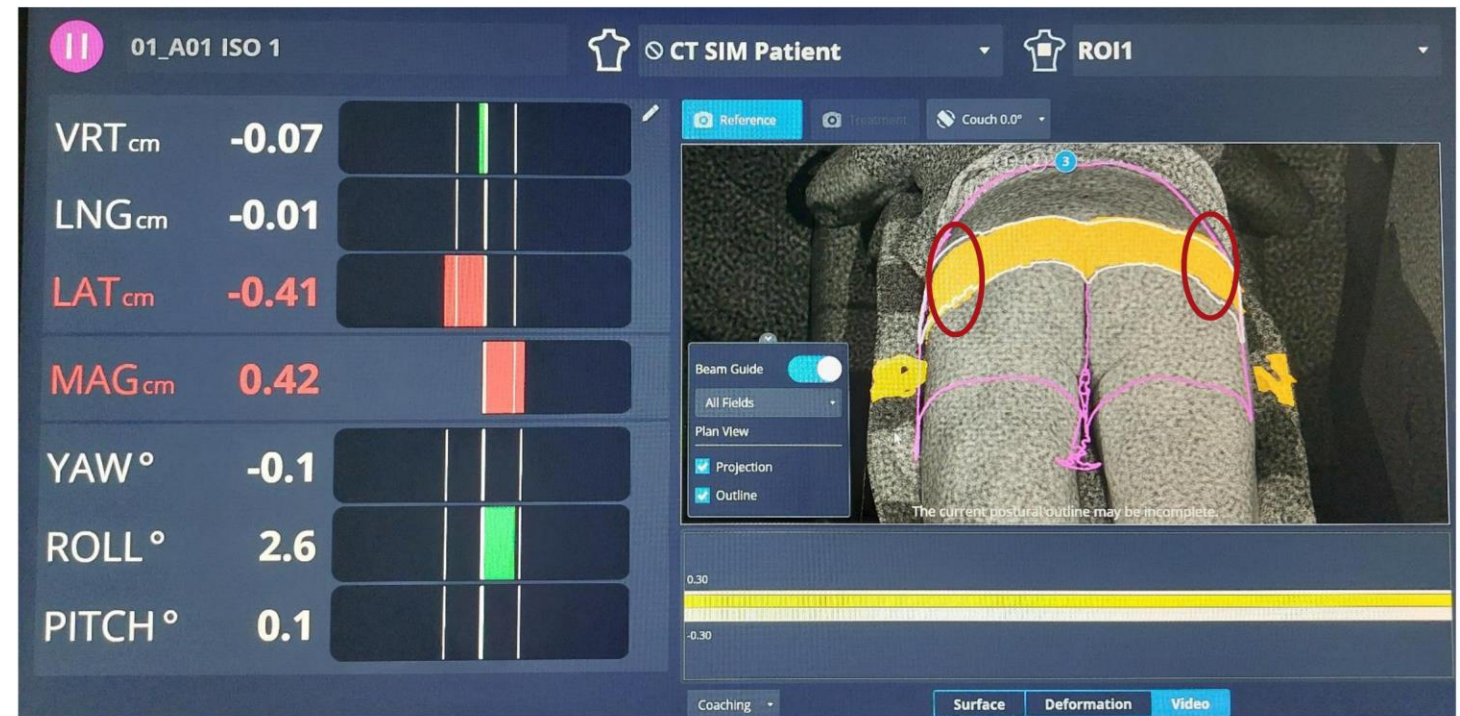
1. Lateral deviation is visible in BG



## Patient 3: Prostate VMAT

2 full VMAT arcs, patient in prone position.

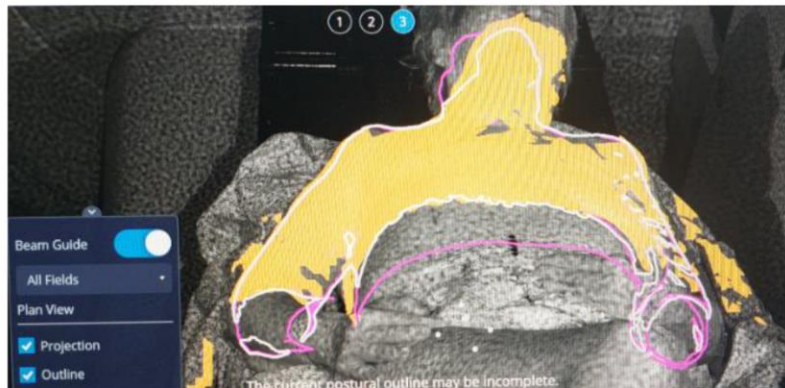
2. Roll deviation is visible in BG



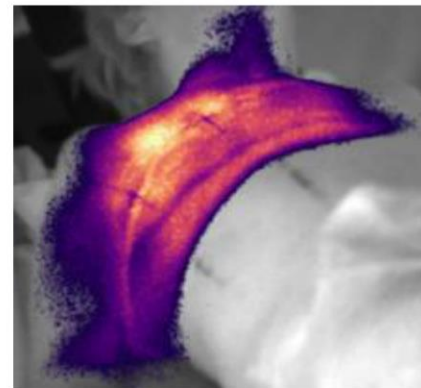
## Patient 4: Thoracic wall (FAST-Forward trial)

Partial VMAT irradiation of thoracic wall according FAST-Forward trial (26Gy in 5 fractions).

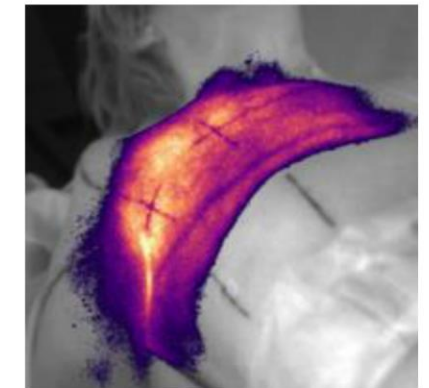
Beam Guide showed a deviation in the neck/chin region but unfortunately it was not possible to reposition the patients chin due to patient conditions. Check of treatment delivery quality with Dose RT.



Beam Guide for positioning of Fx 3



Dose RT of Fx 3



Dose RT of Fx 2

# Any questions?



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- **Conclusions:**

- BG enhances postural video with a prediction of dose
- Gives confidence to therapists of normal tissue sparing
- Highlights postural alignment issues (e.g. arm / chin)
- Visually confirms beam entry & exit

*07.05.2026 - Orlando*

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*Acknowledgements: Mike & Adi, Advent Health. Florian, MIISM*