

RPC Report to ATC Steering Committee



April 6, 2005
Washington, DC
Geoffrey Ibbott, Ph.D.

RPC Activities



Remote Reviews



Patient Dosimetry



On-site Reviews

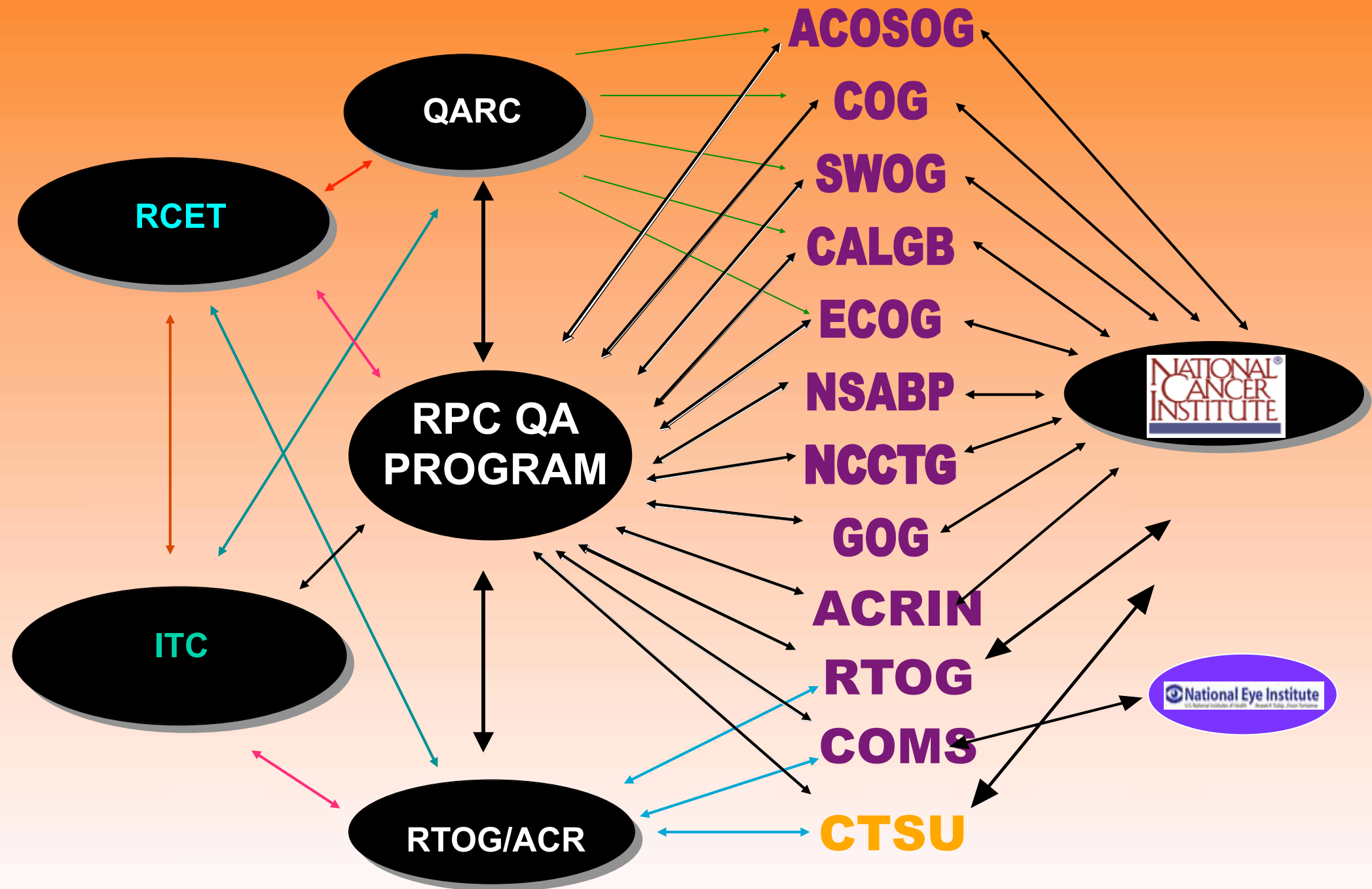


Support of Study Groups



Research/Outreach

RPC has relationships with all study groups



NCI's



WATCHDOG

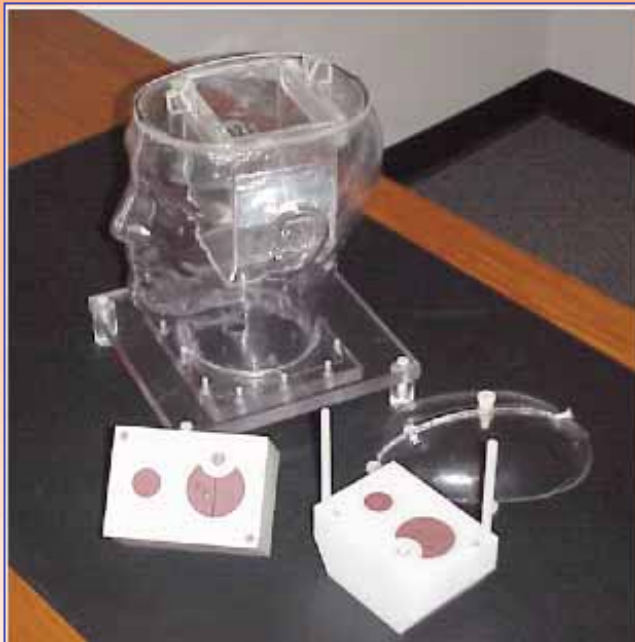
RPC Phantoms



Pelvis IMRT



Thorax SBRT



H&N IMRT

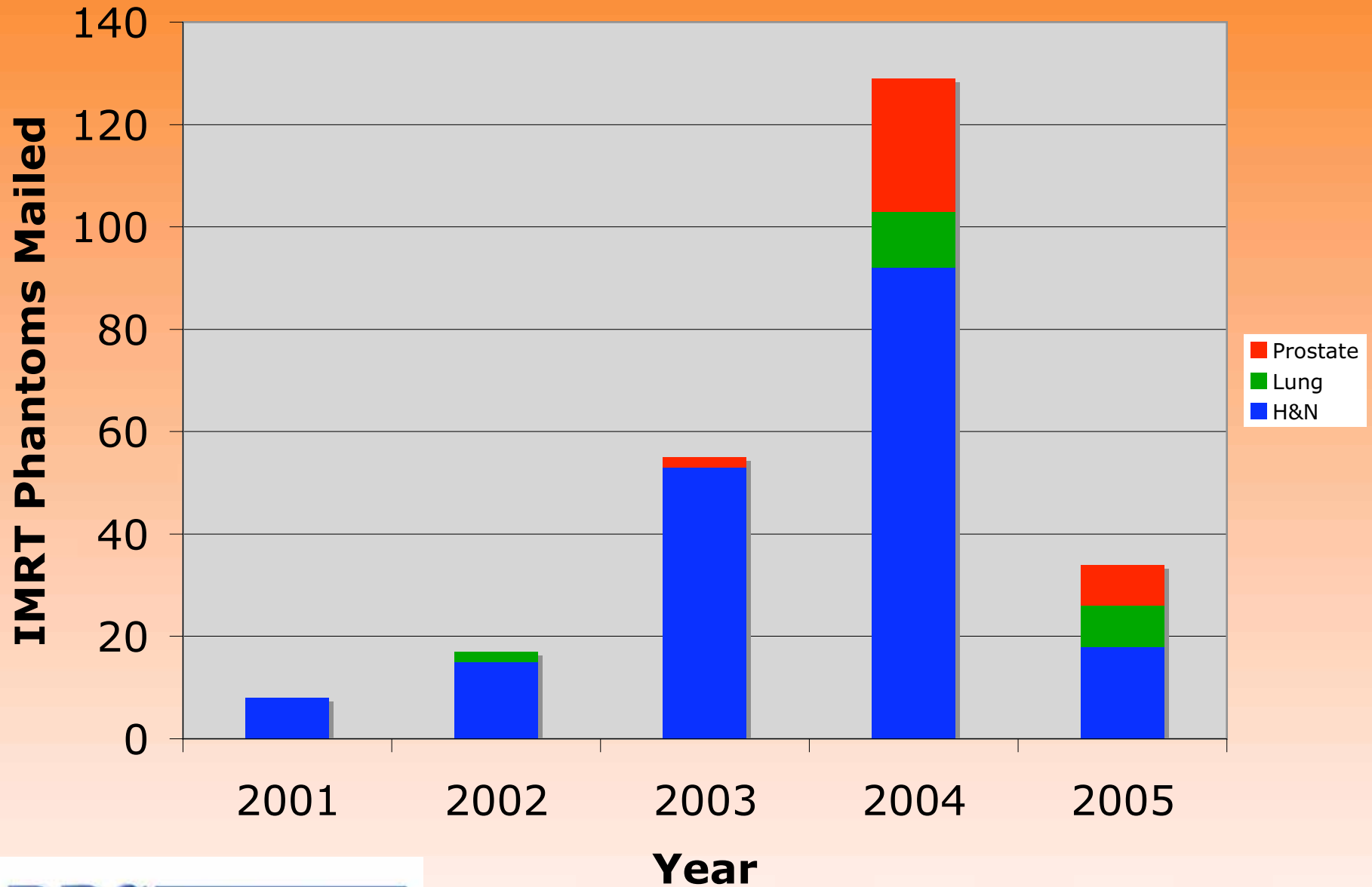


SRS

RPC Phantom Team



Number of Phantom Mailings



Phantom Results

Phantom	H&N	SRS	Prostate	Thorax
Irradiations	152	72	22	11
Pass	102*	40	16	6
Fail	41	32	3	0
Under analysis or at institution	9	0	3	5
Year introduced	2001	1996	Spring 2004	Spring 2004

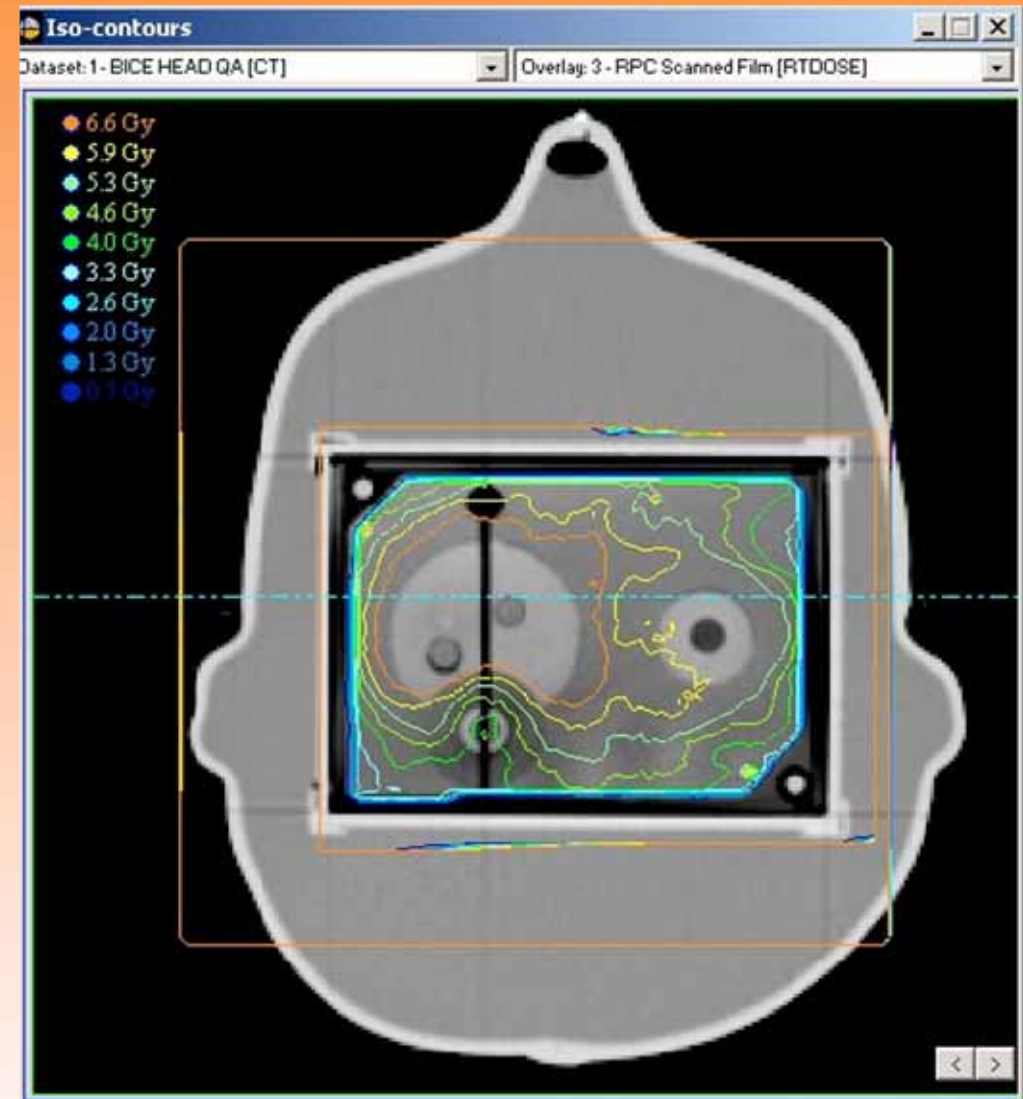
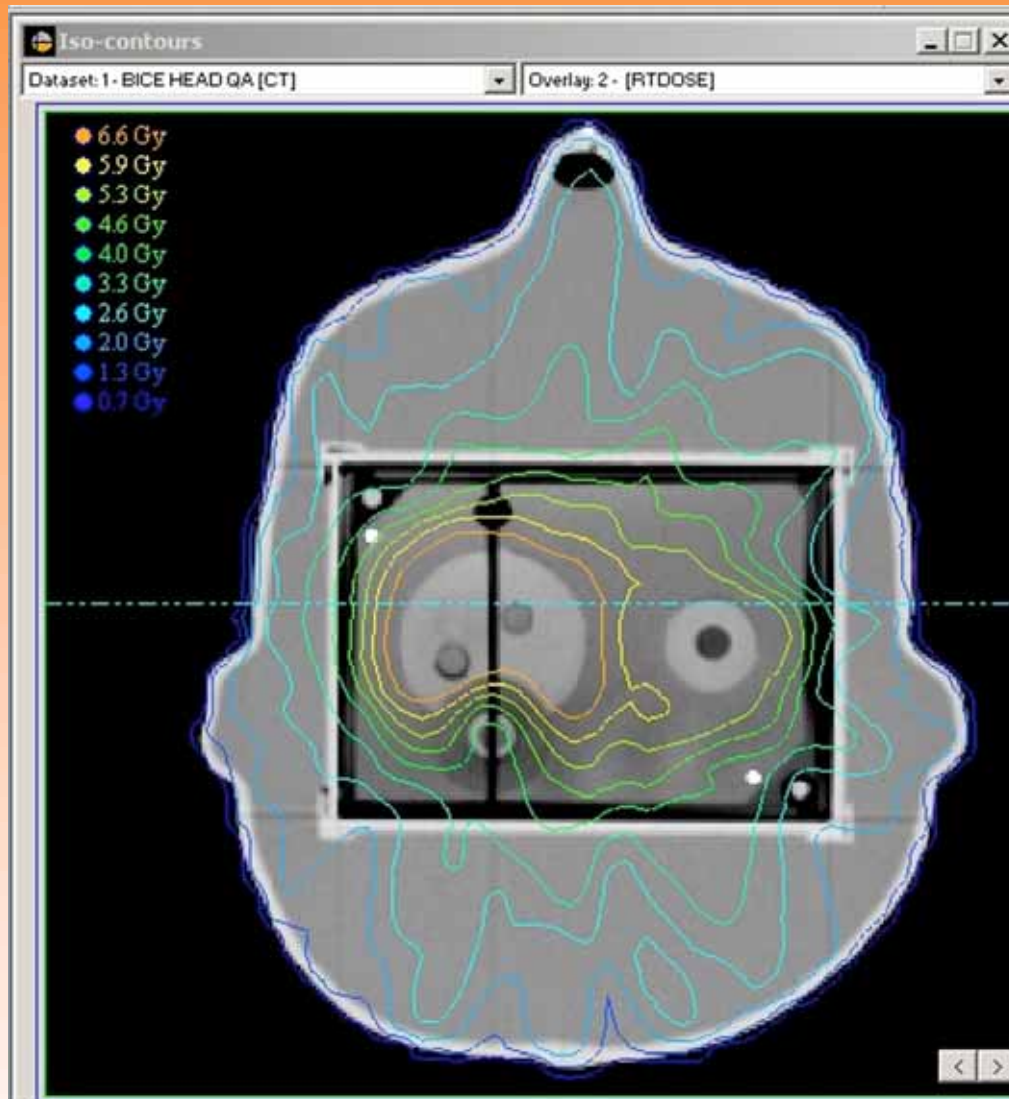
*** 34% of institutions failed on the first attempt**

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Comparison - DoseQA



Phantom Results (cont'd.)

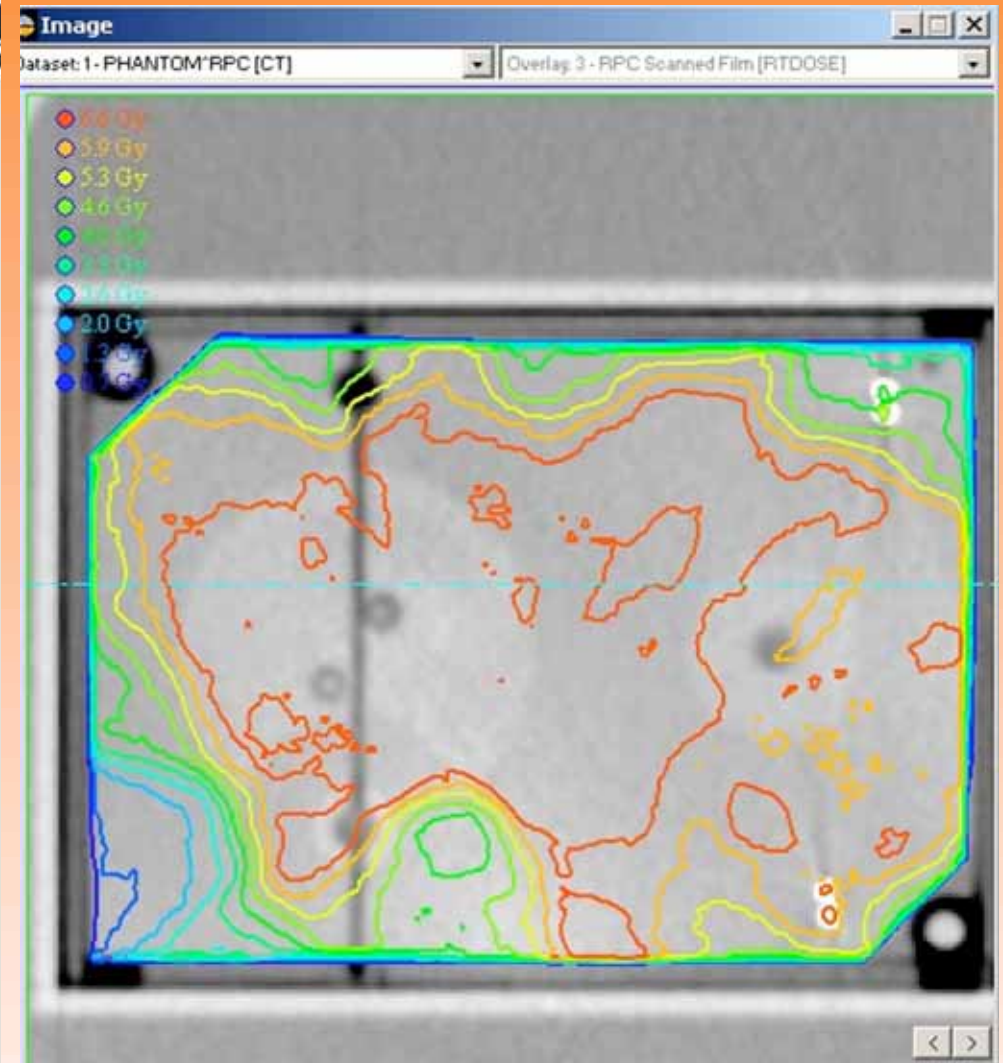
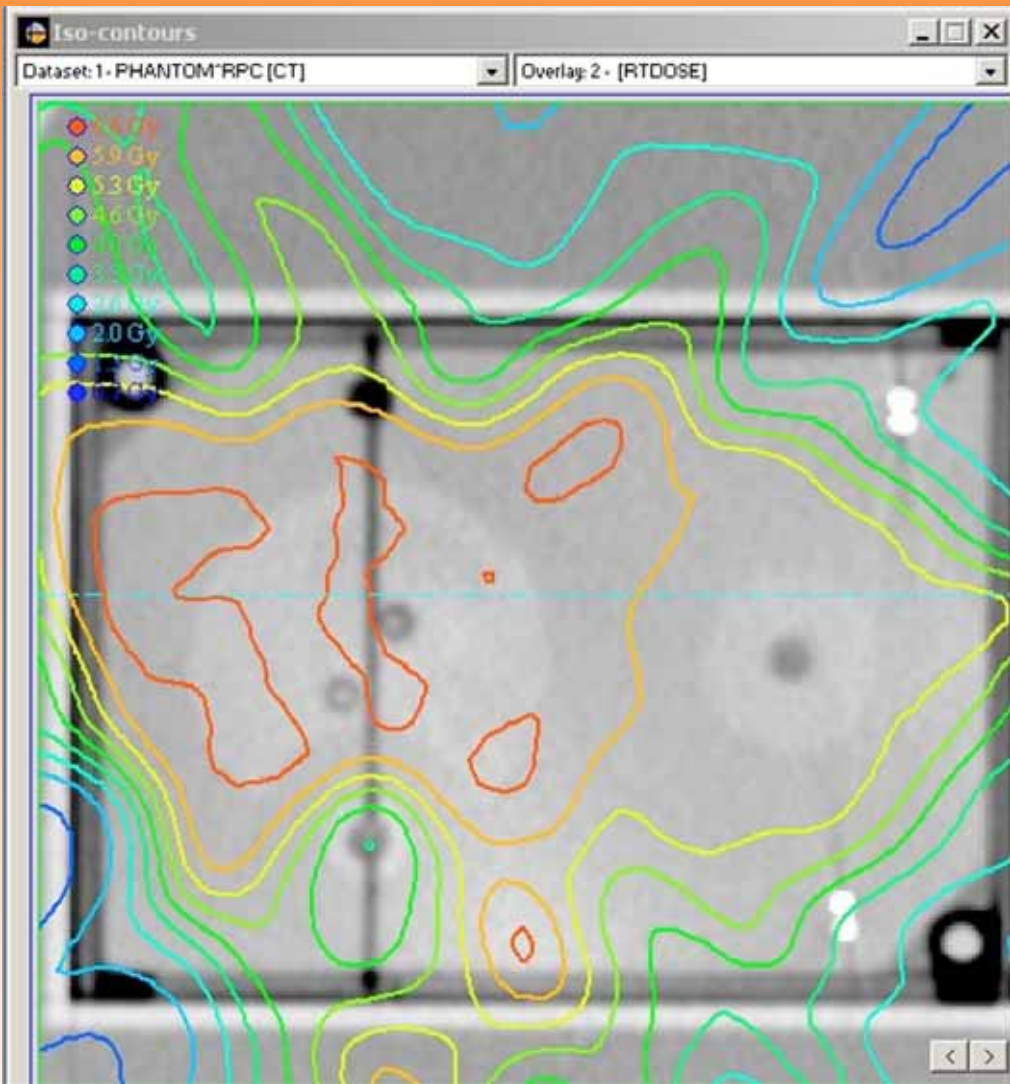
- ★ 18 failed by TLD results only
- ★ 5 failed by film results only
- ★ 9 failed by both

	1° PTV	2° PTV	OAR	Displ. (mm)
Mean	1.01	1.00	1.09	-1.2
Std. Dev	0.054	0.050	0.27	3.5
Count	227	113	113	94
Range	0.78 - 1.13	0.85 - 1.22	0.42 - 2.24	-15 to +8

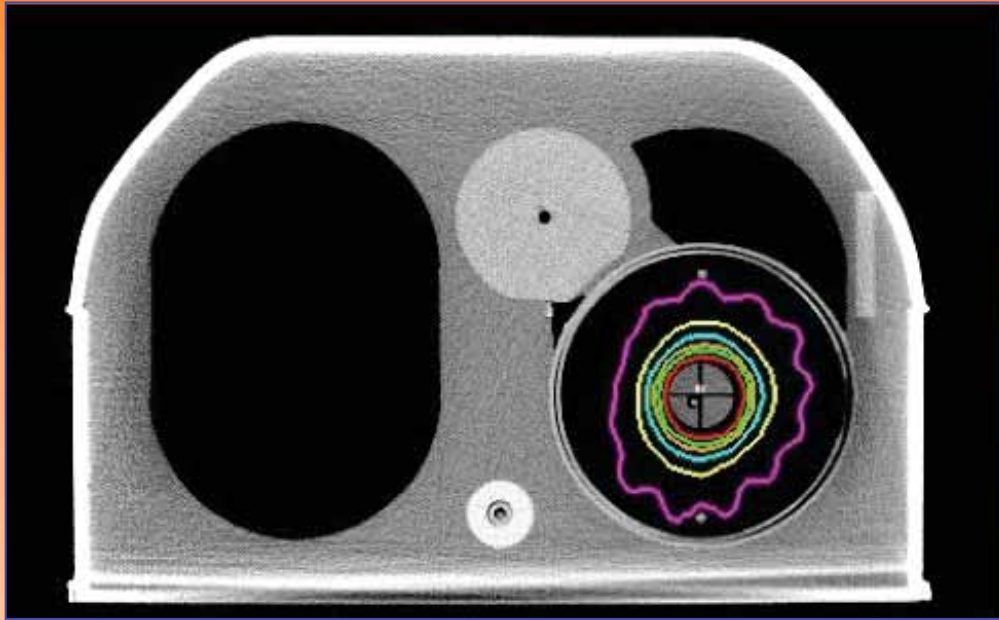
Explanations for Failures

- **Incorrect data in planning system**
 - **Output factors, %dd**
- **Inadequacies in beam modeling (Cadman, et al; PMB 2002)**
- **Not adjusting irradiation time according to measurements**
- **Errors in indexing Peacock system**
- **Setup errors**

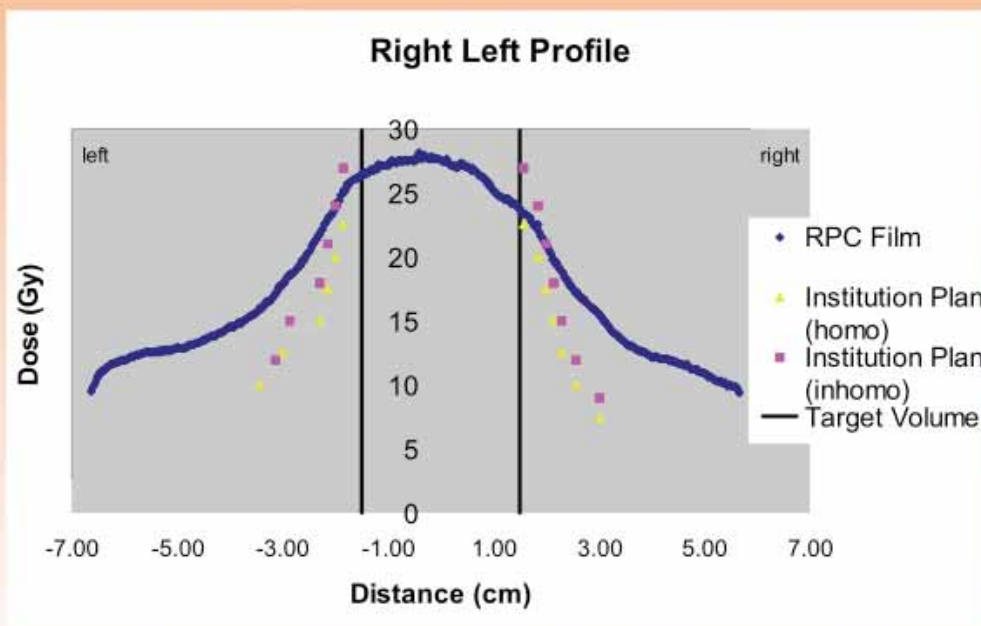
Comparison - Failure



RTOG 0236 SBRT lung protocol



- **3 lung phantoms available now**
- **19 institutions have irradiated phantom**
- **Criteria developed (waiting for RTOG approval)**
- **12 institutions on list, but not ready to receive phantom**



Institutions Receiving Inaugural Credential for RTOG 0236

Indiana University
Thomas Jefferson
Wake Forest
University of Rochester
University of Colorado
Washington University
Princess Margaret

Institutions in progress

UT Southwest Dallas

Cleveland Clinic

Roudebush VA Medical
Center

University of Maryland

Medical College of Virginia

University of Florida

St. Joseph in Phoenix

University of Wisconsin

Medical College of
Wisconsin

MD Anderson

Proposed Criteria

Heterogeneous plan

Dose to target [TLD/Inst.] 0.97±0.05

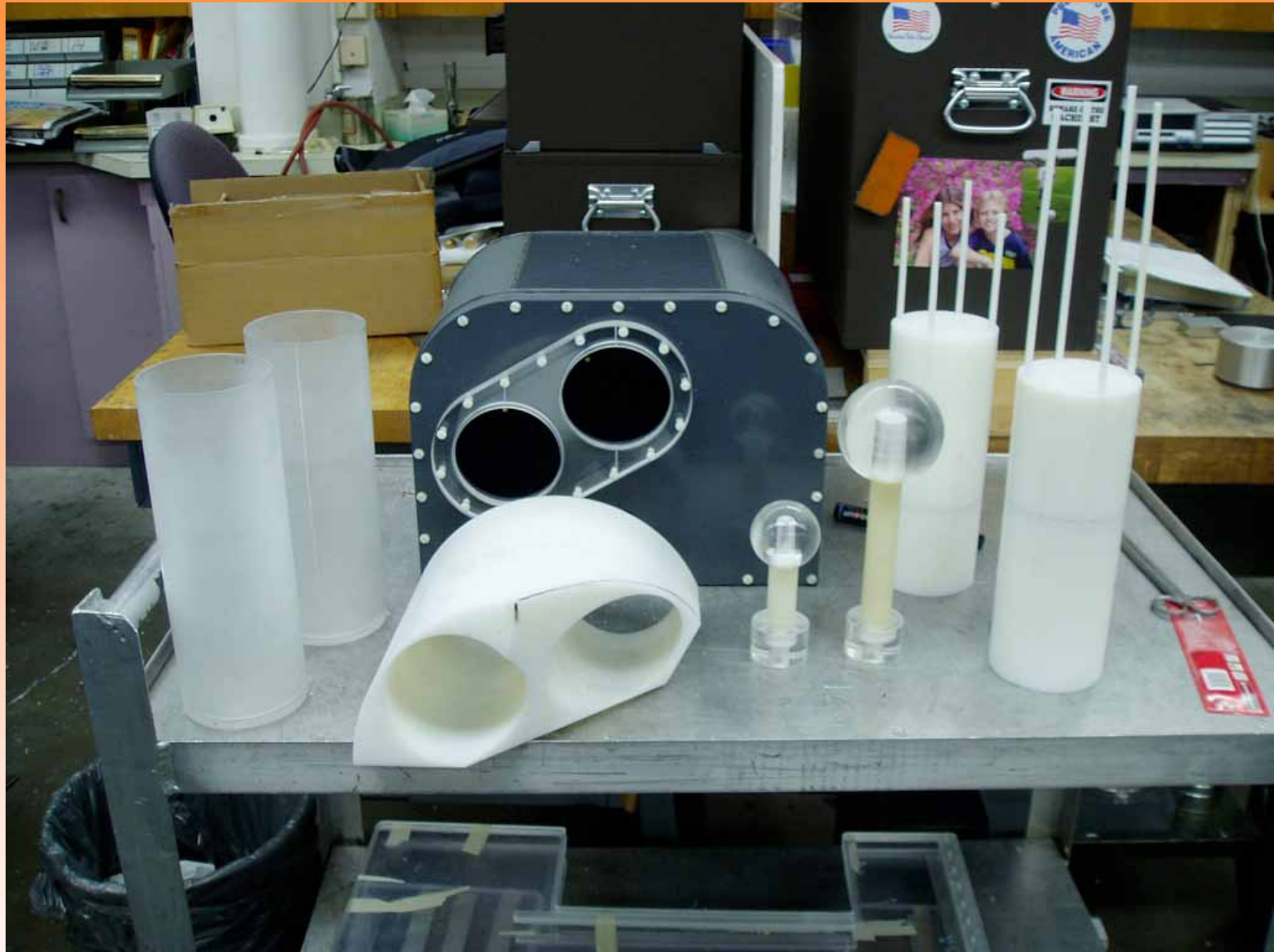
Distance to agreement 5 mm

Homogeneous plan

Dose to ≥99% of PTV 18 Gy

Max. dose 2 cm from PTV
in any direction [$D_{2\text{cm}}$] < 11.7 Gy

Liver Phantom



Liver Phantom (cont'd.)



Liver Phantom on Treatment Couch







Reciprocating Table







Credentialing Programs

Phantoms

-  H&N - RTOG 0225, COG ACNS0331
-  Pelvis - RTOG 0126, 0418
-  Lung - RTOG 0236
-  Liver - RTOG 0438

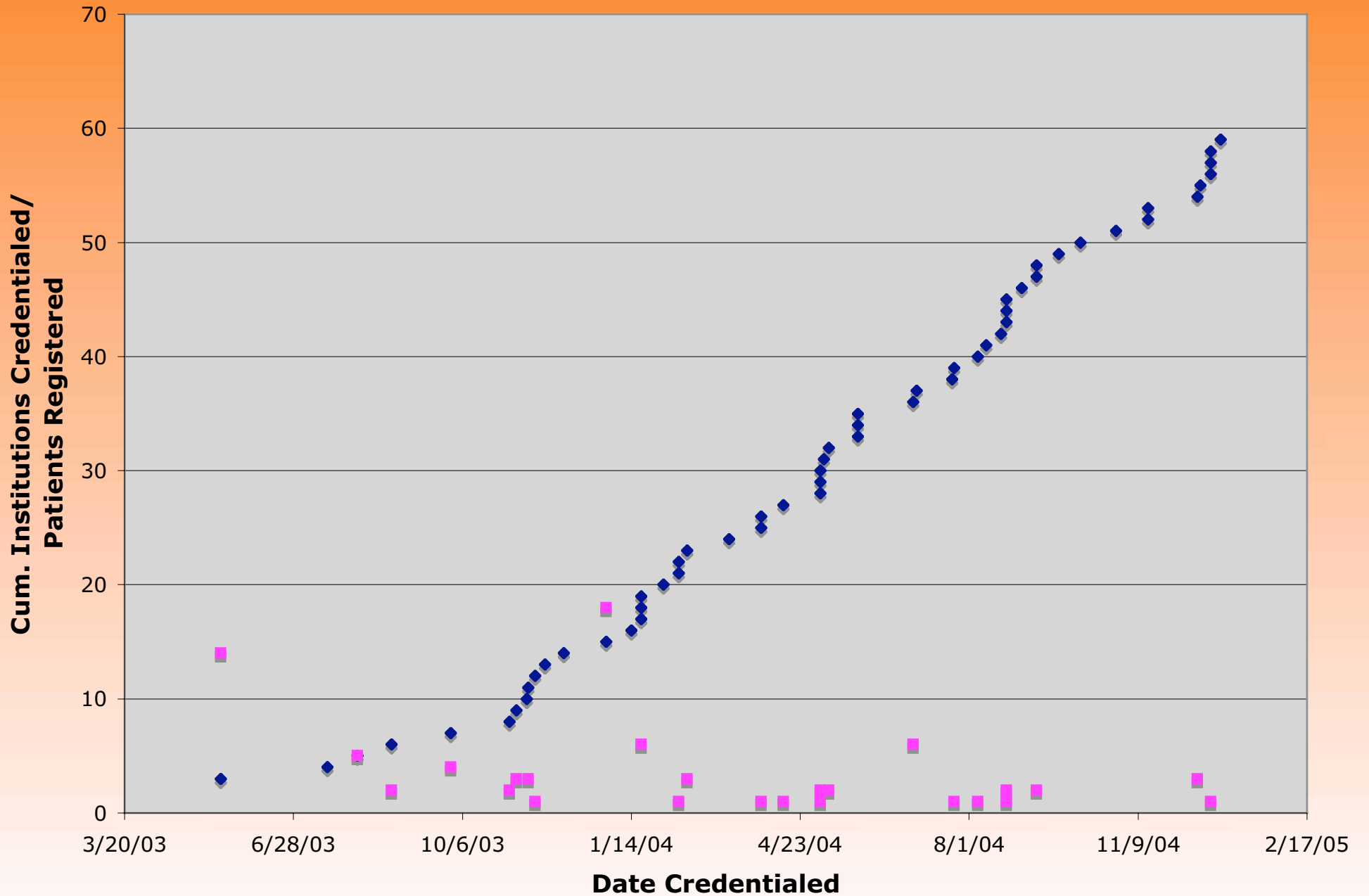
Benchmarks

-  LDR Prostate Brachy - 0232
-  HDR Prostate Brachy - 0321
-  NSABP/RTOG PBI - B-39/0413
-  3D CRT - NCCTG

Credentials Awarded

	Credentials	Institutions
0232 Prostate LDR Brachy	63	56
0321 Prostate HDR Brachy	8	4
Cervix	57	48
3D CRT	40	40
PBI	30	5
TOTAL	260	150

Prostate Brachytherapy 0232 Credentialing



PBI Protocol Credentialing

- Institution downloads credentialing instructions and CT-based benchmark cases from web site
- Institution completes questionnaires on-line
 - Physician completes knowledge assessment
 - Physicist completes facility inventory
- Data sent to NSABP server automatically
- Institution submits treatment plans to ITC
- Plans reviewed by RPC using RRT
- Notification of credentialing sent to NSABP server



Update Image Edit Contours Contour Colors

Isodose Contours Plan: fx1

4 Gy 4.5 Gy Gy

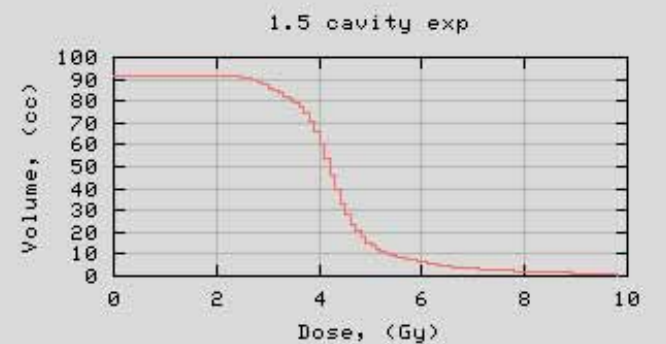
3 Gy 2 Gy Gy

Structures (dashed when isodoses are displayed) All Off

All On

ON 1.5 cavity exp ON ITC_SKIN

Struct: 1.5 cavity exp Eval DVH



Plan ID	Vol ≥ Ref	Max	Min	Mean
Plan1	0.00 %	9.84 Gy	2.31 Gy	4.42 Gy

Total Volume: 91.35 cc
Click on Plan ID for plan summary.

Image Click Mode

Re-Center

EXIT

Window/Level

Preset: Default (soft tissue)

Window: 470

Level: 20 Update

<u>Institution</u>	<u>3D CRT</u>	<u>MammoSite</u>	<u>Multi-Cather</u>
21st Century Oncology Naples	*	*	
Abington Memorial Hospital	*	*	
Allegheny General Hospital	*	*	*
Alta Bates	*		
Baptist Medical Center	*	*	
Boca Raton Community Hospital	*	*	
Central Maryland Oncology	*		
Clarian Health Partners Methodist Hosp	*		
Froedtert Memorial Lutheran Hospital	Y	Y	Y
Lankenau Hospital	*	*	
Medical College of Virginia	Y	Y	Y
Memorial Hospital Cancer Center	*	*	
Montgomery Cancer Center	*	*	
New Mexico Oncology Hematolog Con	*	*	*
North Idaho Cancer Center	*		
North Kansas City Hospital	*		
Radiation Oncology, City of Hope		*	*
Redding Cancer Treatment Center		*	
Sacred Heart Hospital	*		
Schiffler Cancer Center	*	*	
Scott & White Hospital	*	*	
St.Agnes Medical Center	*	*	*
Suburban Hospital	*		
Texas Cancer Clinic	*	*	
The Bryn Mawr Hospital Cancer Center	Y	Y	
Torrance Memorial Medical Center	*		
Un Alabama @ Birmingham	*	*	
Univ.of Colorado Hospital	*	*	
University of Maryland Baltimore	*	*	*
Wake Forest Un Baptist Med Cntr	*		
West Michigan Cancer Center	*	*	
William Beaumont Hospital	Y	Y	*
William Beaumont Hospital-Troy	Y	Y	*
York Cancer Center	*	*	

	3D	Mammo	Multi
Inst applied	30	26	9
R.O. applied	45	39	19
Inst cred	5	5	2
R.O. cred	14	14	2

The End



Rose Palmisano / The Albuquerque Journal



Other Issues

BrachySys

- 1/14/05 - Notified new version ready
- 1/18/05 - Problems with install -
asked to postpone

DoseQA

- Gary Gluckman coming to Houston
Feb 2 to install

PBI Credentialing Status - Treatment Planning Systems

Vendor	System	Ver.	Exch. Format	3DCRT Export	PBI-3D Import	HDR Brachy Export	PBI-HDR Import
CMS	Focus/XiO	3.1	R	✓	YES		
Elekta	RenderPlan		R	✓	Contacted		
	PrecisePlan	2.01	D	✓	In progress		
Nomos	Corvus		R				
Nucletron	Helax TMS		R	✓	Contacted		
	TheraplanPlus		R	✓	In progress		
	Plato RTS	2.62	D	✓	YES		
	Plato BPS	14.2.6	D			✓	YES
Philips	Pinnacle ³		R	✓	YES		
	AcqPlan	4.9	R	✓			
Rosses	Strata Suite	4.0	R				
RTek	Piper	2.1.2	R				
Varian	Eclipse	7.1	D	✓	YES		
	Variseed	7.1	D				
	Brachyvision		D			✓	YES

NSABP/RTOG PBI PROTOCOL FACILITY QUESTIONNAIRE

Please fill out all that applies to your institution. This will help expedite the credentialing process. If there are any questions please contact the RPC at (713) 745-8989 or rpc@mdanderson.org

I. Radiation Oncology Facility:

Facility Name:

Address:

Check the appropriate box and provide the Facility's member number: RTOG #: NSABP#:

Fill in the Facility's identification: NCI#: RTF#1:

Is this Facility also known by other name(s)? If so, please provide:

II. PERSONNEL CONTACT INFORMATION

A. Radiation Oncologist Responsible for PBI Patients

Name:	<input type="text"/>	Phone:	<input type="text"/>
Address:	<input type="text"/>	Fax:	<input type="text"/>
	<input type="text"/>	E-mail:	<input type="text"/>
	<input type="text"/>		<input type="text"/>

B. Surgeon Responsible for PBI Patients

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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MammoSite & Multi-catheter Brachytherapy:

Vendor and version: _____

How are the CT images entered for planning? CD tape optical disc
 digitized from hardcopy electronically via network

Other (explain): _____

How are CTV, PTV and normal tissue contours entered?

Defined on planning system defined on CT and input as above

Other (explain): _____

Number of calculation points for dose calculation: _____ (should be ≥ 2000 points for each volume)

Dose volume histograms calculated by computer? Yes No

Dose volume histograms available as graphs? Yes No

Dose volume histograms available as tables? Yes No

How do you superimpose dose distributions on CT images? By computer By hand
If by hand; describe technique: _____

Placement of catheter device done under which image guided technique: _____

By the Surgeon Radiation Oncologist

V. HDR Brachytherapy Quality Assurance Procedures:

A. Source strength verification:

Submit a description of the procedures followed to verify the calibration of the source(s).

Include:

- Description of dosimetry system.
- Confirmation that calibration meets national standards. (Attach copies of ADCL certificates)
- Measurement and calculation techniques, including conversion of the above standard into the

CREDENTIALING FOR NSABP/RTOG PBI PROTOCOL KNOWLEDGE ASSESSMENT FORM

This questionnaire is intended to evaluate your understanding of the protocol. If there are any questions please contact the RPC at (713) 745-8989 or rpc@mdanderson.org

Facility Name:

Check the appropriate box and provide the Facility's member number: RTOG #: _____ NSABP#: _____

Fill in the Facility's identification: NCI#: RTF#1:

Name of Radiation Oncologist completing this form:

Identify the PBI Technique(s) to be used: MammoSite Multi-catheter Brachy 3D Conformal EBRT

(Complete this page and the appropriate section(s) on pages 2 – 4.)

Data to submit: List the data to be submitted for each patient:

-
-
-
-
-
-

MammoSite Planning:

Facility RTOG # NSABP # NCI # RTF#

Name of Radiation Oncologist completing this form:

1. Acceptable deviation in the symmetry of the balloon is mm and the minimum balloon surface to skin distance is mm.
2. According to the protocol:
 - a. the CTV encompasses:
 - b. the PTV encompasses:
 - c. the PTV_EVAL encompasses:
3. The dose is prescribed at cm radial distance from the balloon surface for Gy to the CTV PTV PTV_EVAL for fractions single fractions BID TID
4. Identify the 4 parameters to be used to determine whether the MammoSite RTS placement is appropriate for treatment: 1. 2.
3. 4.
5. The actual volume of tissue receiving 150% (V150) and 200% (V200) of the prescribed dose will be limited to cc and cc, respectively.
6. Dose Limitations for Normal Tissues: Uninvolved Normal Breast: < % of the whole breast reference volume should receive % of the prescribed dose.
7. The balloon volume should be subtracted from the whole breast volume for this calculation?
 True False
8. An ultrasound or x-ray must be performed prior to each delivered fraction and evaluated for any change in
balloon diameter. True False