

RPC REPORT TO ATC EVALUATION COMMITTEE

Geoffrey Ibbott, Ph.D.



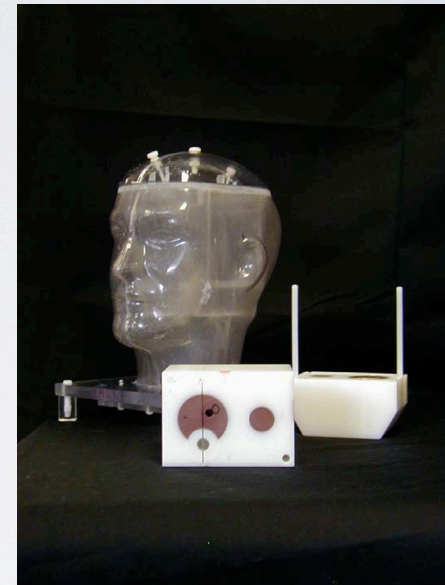
ONGOING SERVICE PROJECTS

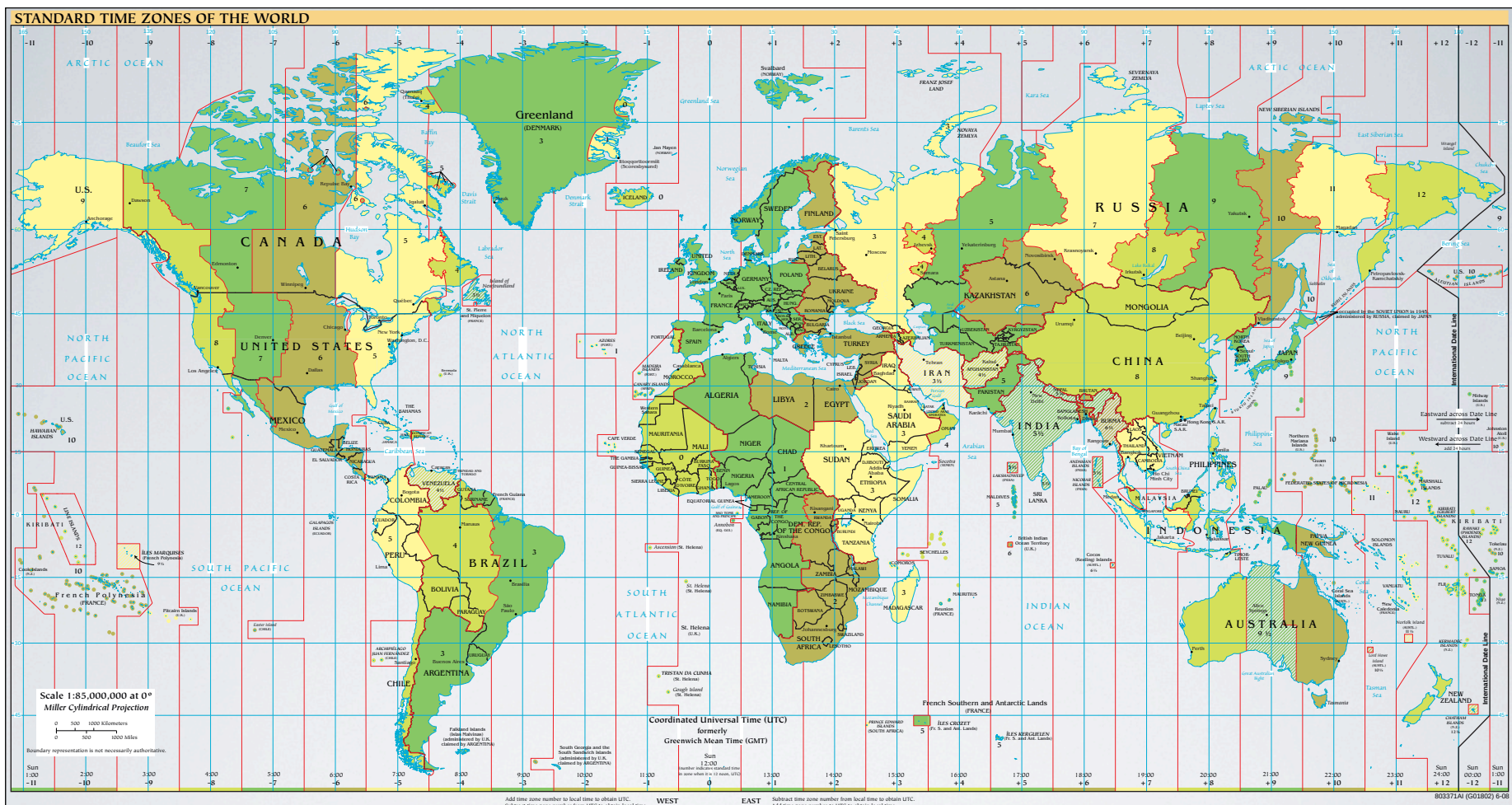
- Monitoring of machine calibration
- On-site dosimetry review visits
- **Credentialing with benchmarks and phantoms**
- Review of patient treatment records
- **Development of Monte Carlo calculation capability**
- **Monitoring of proton therapy centers**



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RPC TLD NETWORK

>1,600 RT facilities in 23 countries throughout the world,
including 45 EORTC members



RPC Radiological Physics Center
Excellence through Quality Assurance

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8 A.M. to 5 P.M.
M-F Central time.

Holidays

Services

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Publications

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Research/TG-51

Upcoming Meetings

Monitored Institution Search

City Institution Name (wildcard = %)
 State/Province or RTF Number
 Zip Code Show Institutions reset clear
 Country

- ✓ USA
- CANADA
- Non-USA
- AUSTRALIA
- AUSTRIA
- BELGIUM
- CHINA
- INDIA
- ISRAEL
- ITALY
- JAPAN
- N/A
- NETHERLANDS
- NEW ZEALAND
- PERU
- PUERTO RICO
- REPUBLIC OF KOREA
- SAUDI ARABIA
- SERBIA
- SINGAPORE
- SOUTH AFRICA
- SPAIN
- SWEDEN
- SWITZERLAND
- TAIWAN
- TURKEY

Total number of distinct institutions: 1652 (1652 total active institutions monitored)

on Friday Jan 09, 2009 at 11:40 AM

> 1,600 RT facilities in 23 countries throughout the world,
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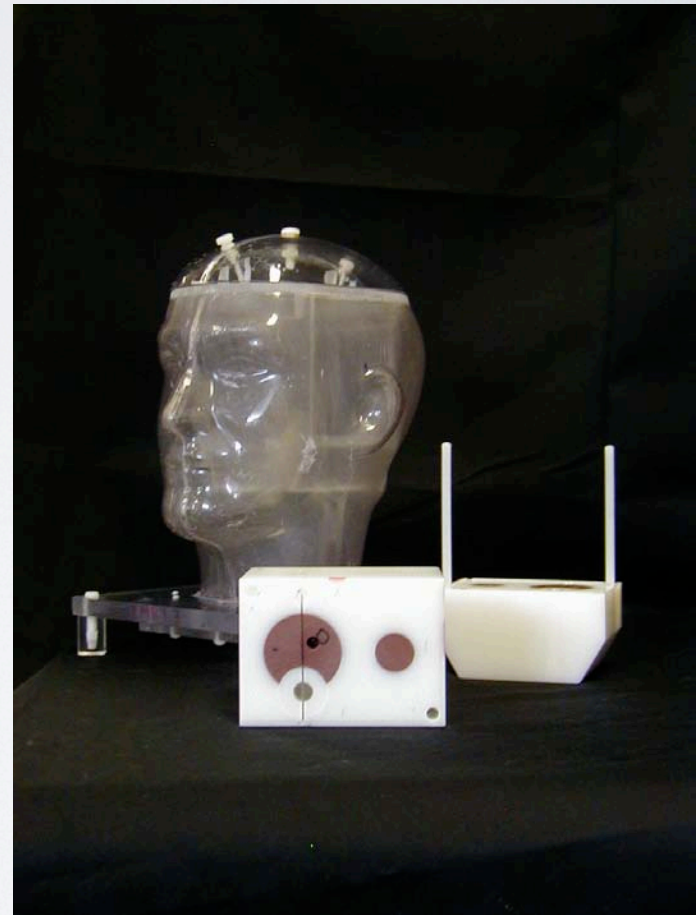
CREDENTIALING

-  IMRT/SBRT phantoms
have been irradiated
>856 times
-  Passing rates:
prostate - 80%
H&N - 75%
lung - 70%
liver - 50%

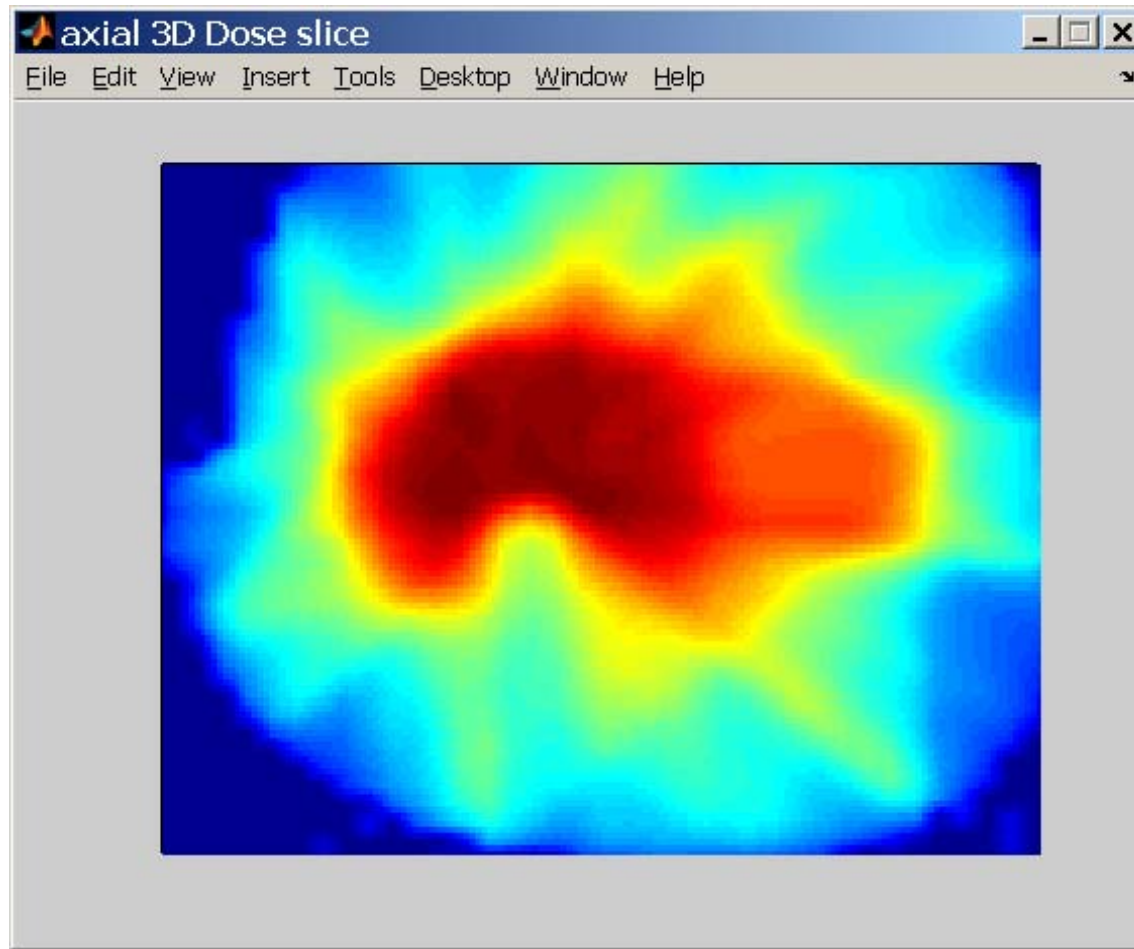


CREDENTIALING

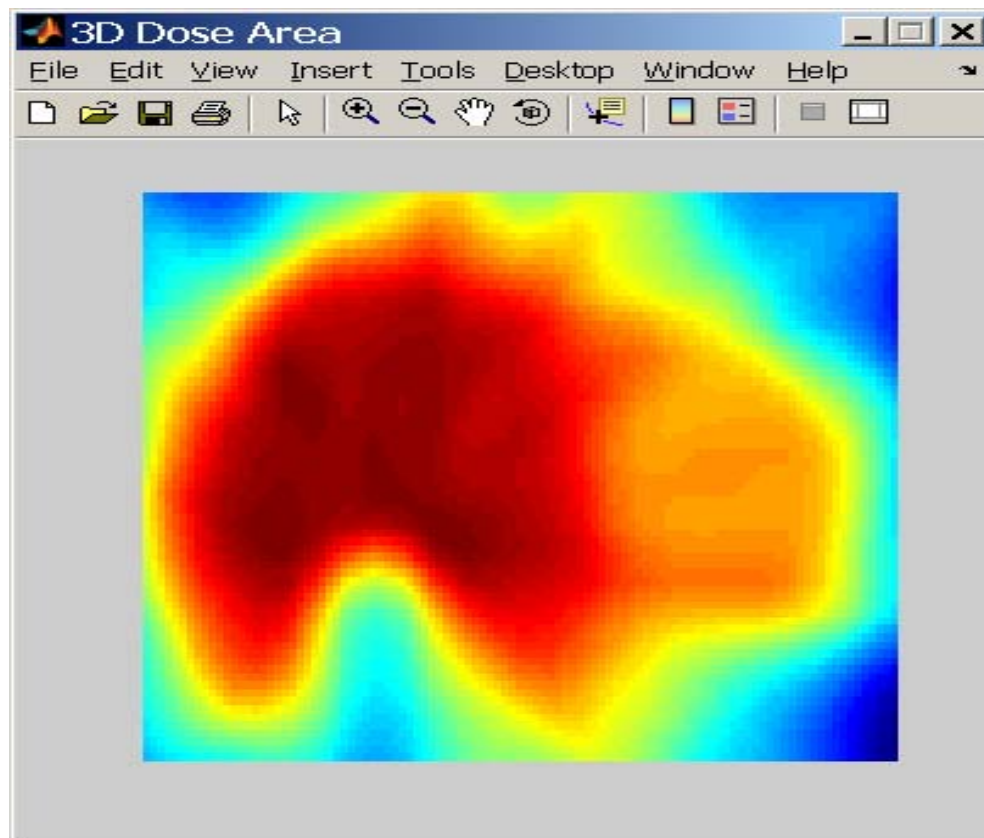
- IMRT/SBRT phantoms have been irradiated >856 times
- Passing rates:
 - prostate - 80%
 - H&N - 75%
 - lung - 70%
 - liver - 50%



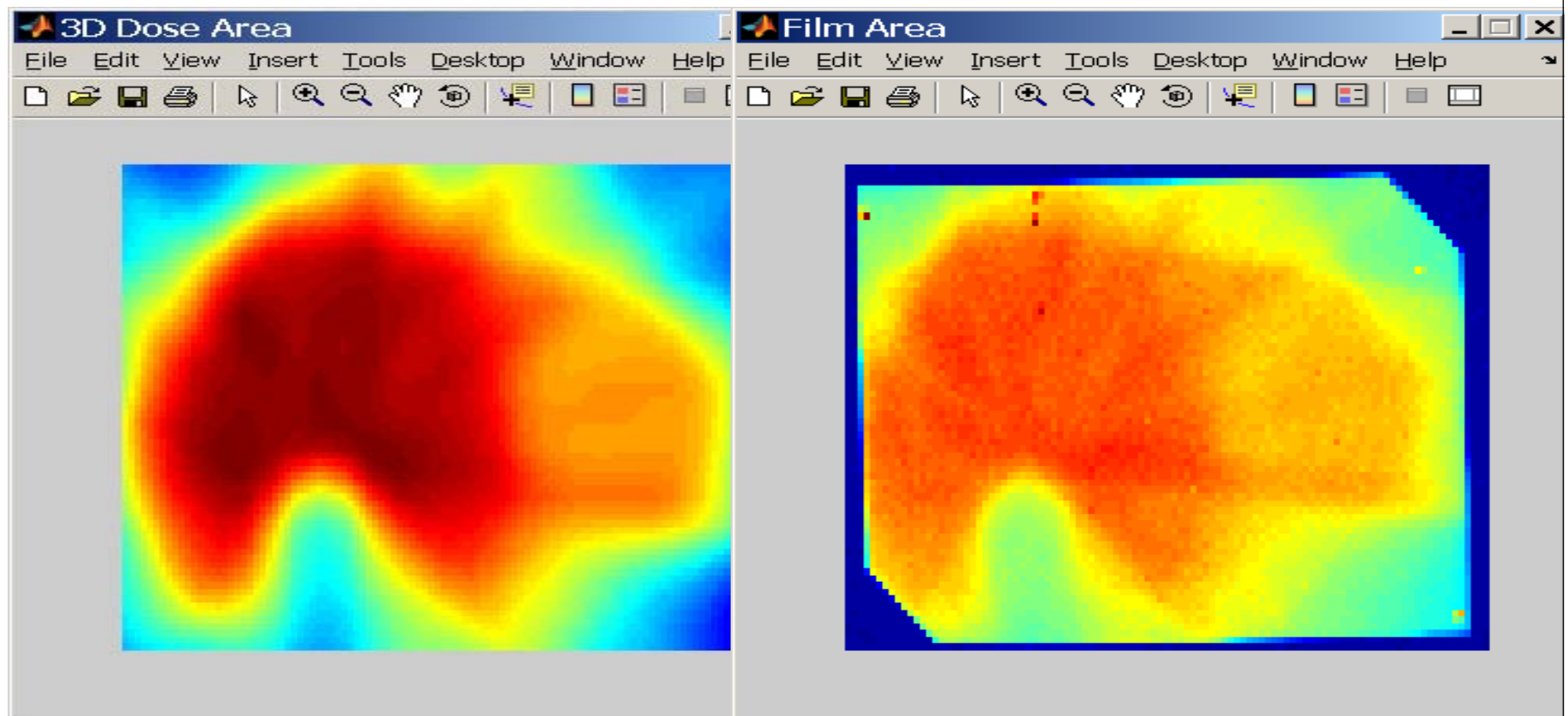
Comparison: Planned vs. Delivered Distribution



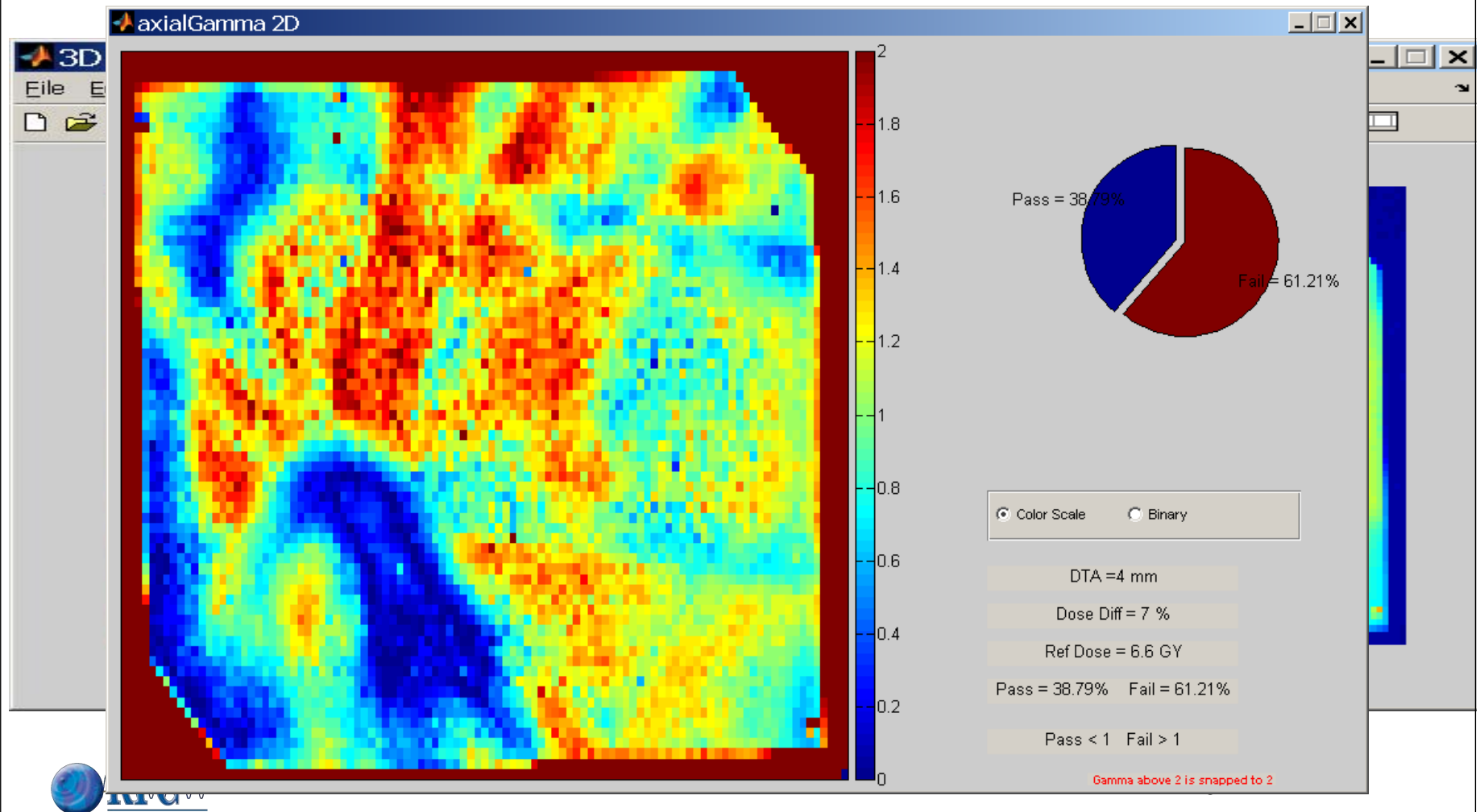
Comparison: Planned vs. Delivered Distribution



Comparison: Planned vs. Delivered Distribution



Comparison: Planned vs. Delivered Distribution

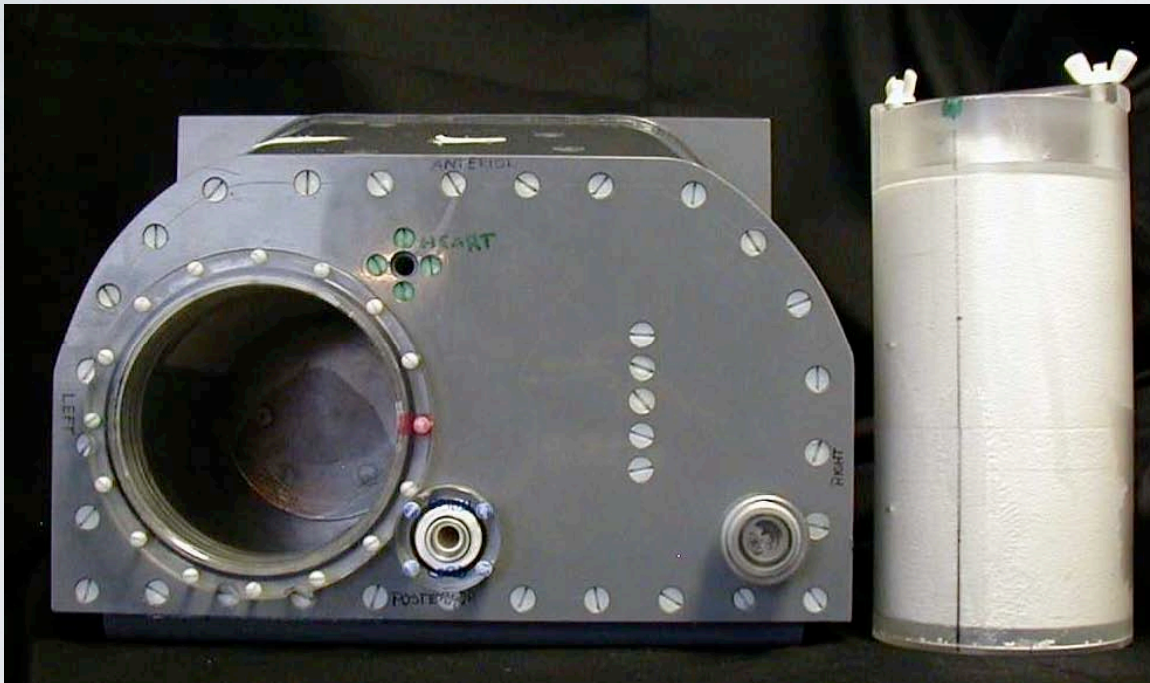


H&N Phantom Statistics

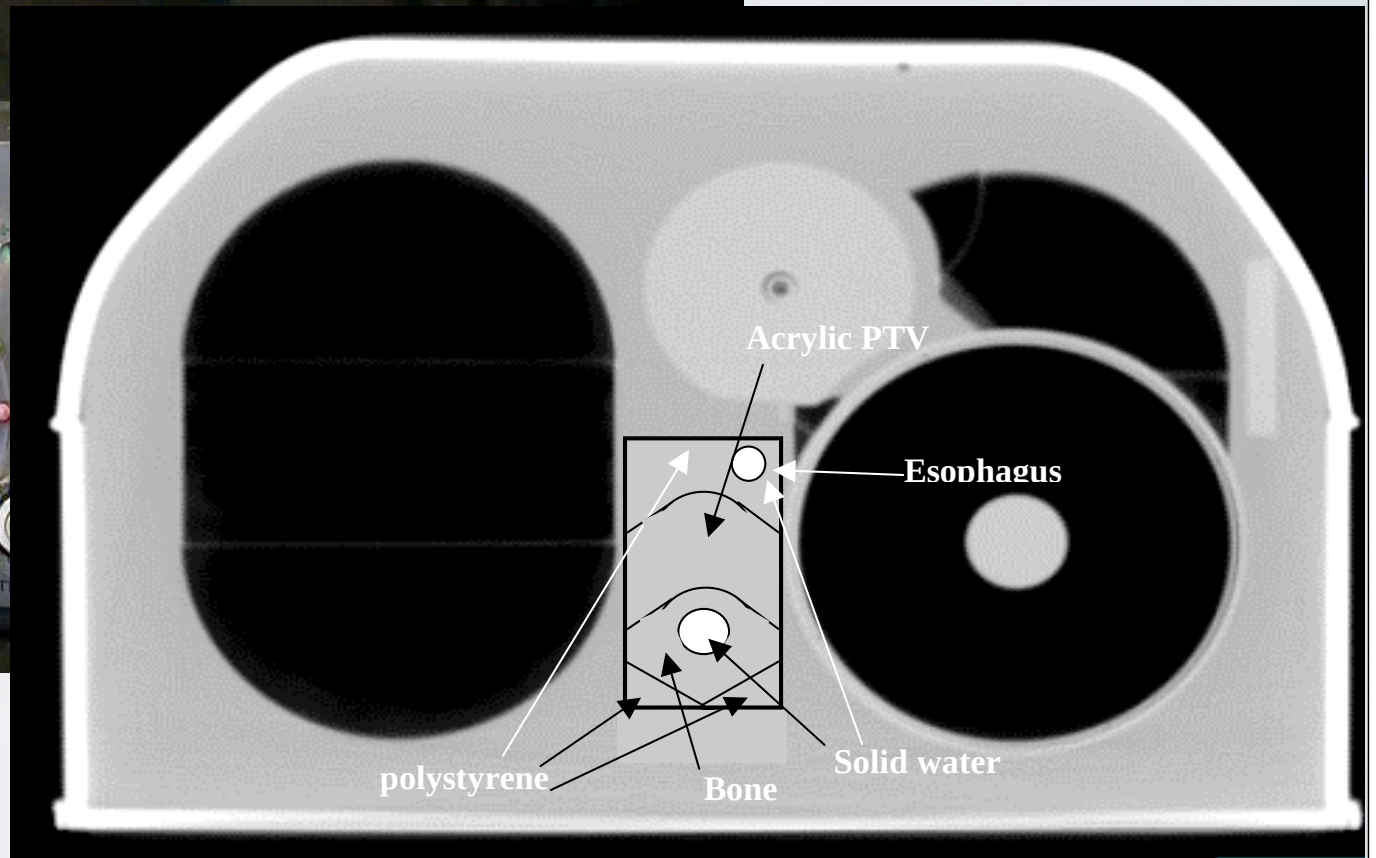
	1 PTV	2 PTV	OAR	Displ.(mm)
mean	0.98	0.98	0.99	0.3
std dev	0.053	0.049	0.19	2.9
count	2291	1141	1142	629
range	0.44-1.26	0.40-1.23	0.27-2.24	-15 - 17



SPINE PHANTOM



SPINE PHANTOM



NEW DEVELOPMENTS

- Developing unified web-based facility questionnaire
 - Address IMRT, IGRT, other advanced technologies, all study groups
- Credentialing and auditing procedures for Adaptive Radiation Therapy:
 - Facility questionnaire to include ART
 - Remote and on-site audit procedures
 - Credentialing procedures for ART
- Implement credentialing tools for Intensity Modulated Arc Therapy (IMAT)
 - Help development of consensus guidelines relative to credentialing
- New Technologies – Particle Beams
 - Develop remote and on-site auditing procedures
 - Develop and implement credentialing procedures

PROTON CENTER CREDENTIALING

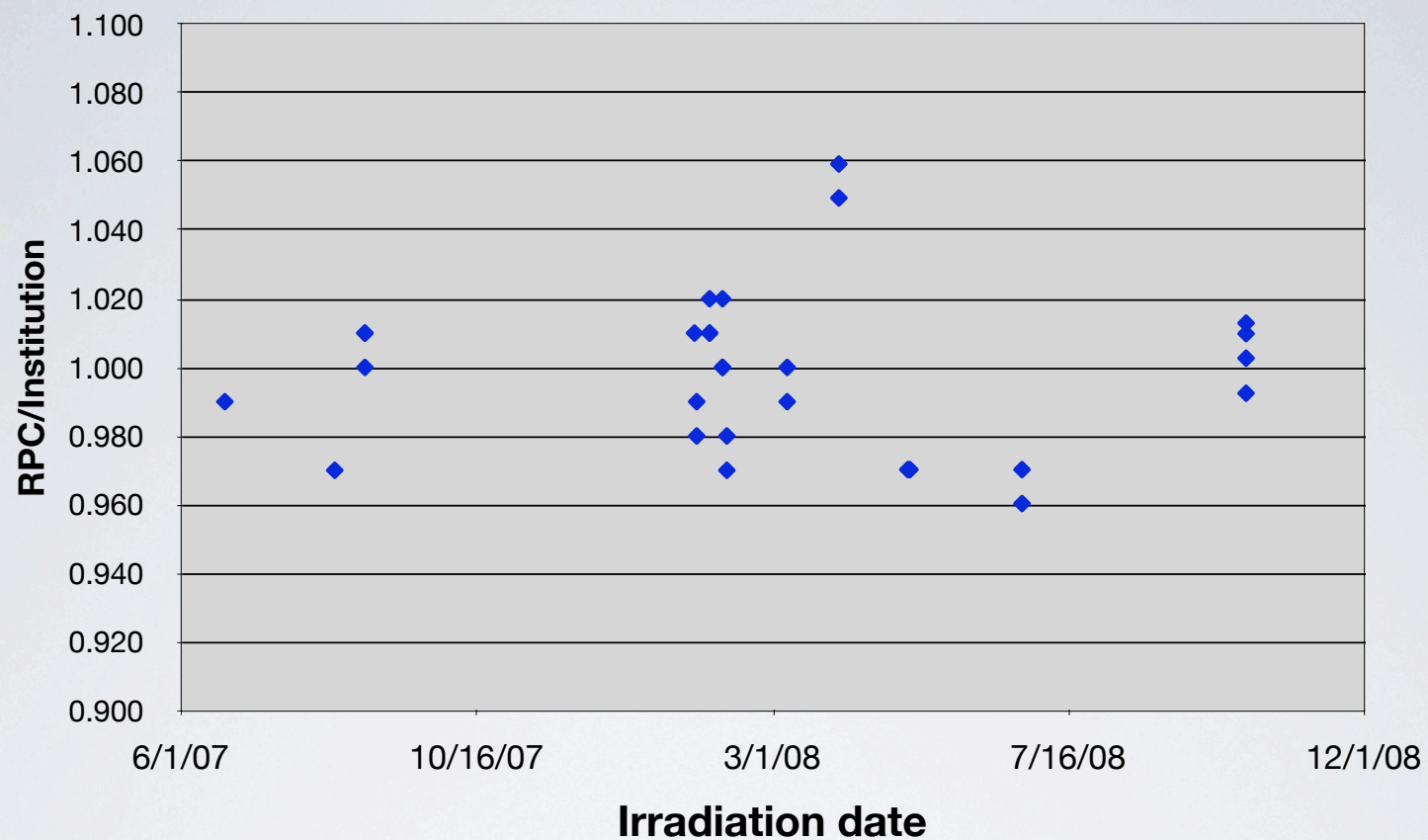
- ❖ Four of five US proton centers have submitted the QARC/RTOG questionnaire
- ❖ Four of five US proton centers are capable of submitting digital data to the ITC

PROTON BEAM MONITORING

5 US facilities have received
TLD $\geq$ once

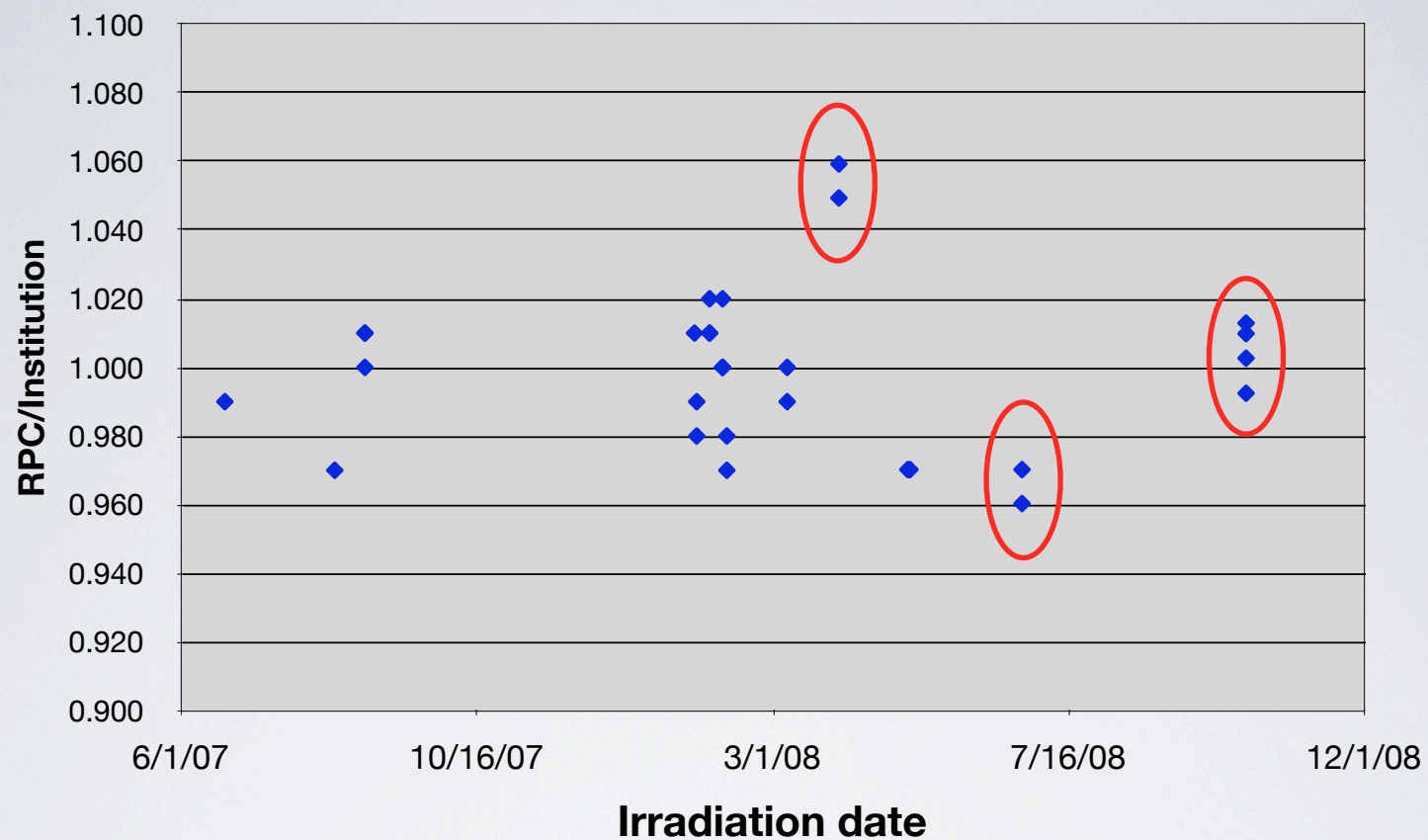
All measurements now fall
within RPC criteria





PROTON TLD RESULTS

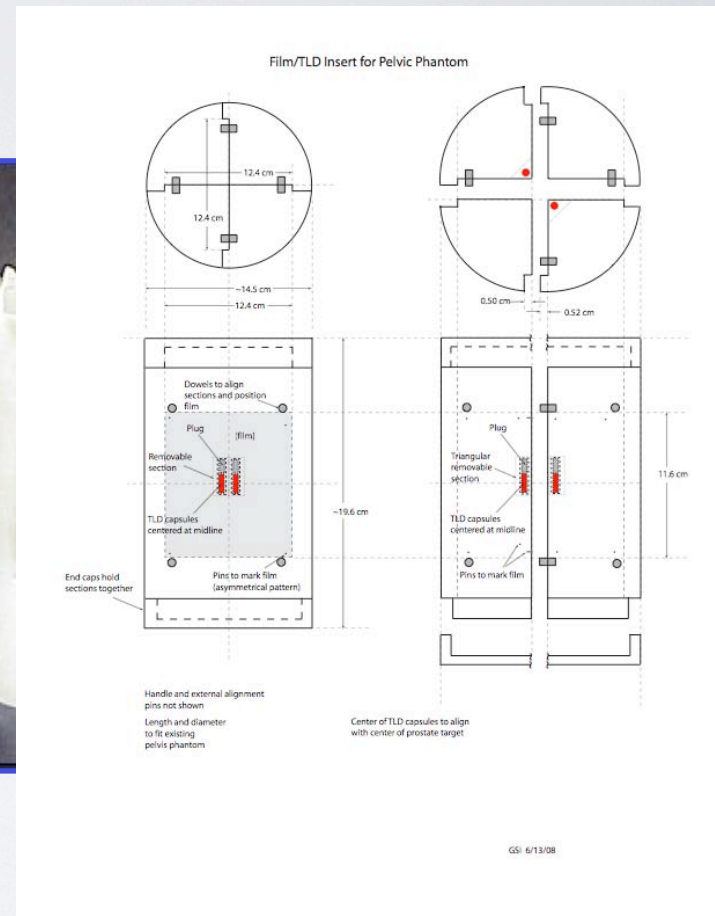
All Institutions now within criteria



PROTON TLD RESULTS

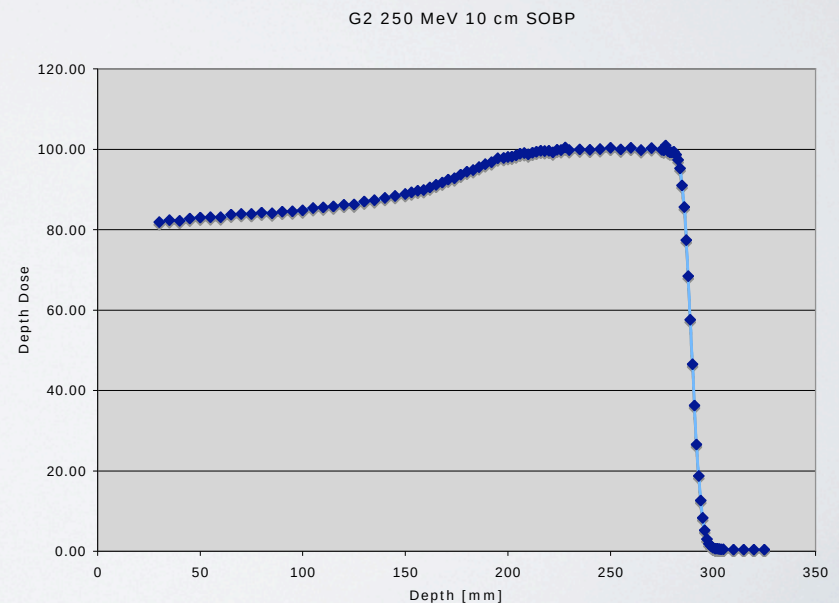
All Institutions now within criteria

MODIFIED PELVIS PHANTOMS



DOSIMETRY REVIEW VISITS

- Comparison with institution data:
 - Reference calibration
 - Representative %depth dose, range
 - Representative profiles
- Output dependence on
 - Snout size, distance
 - SSD
 - Aperture size
 - Energy, range shift
 - Modulation



DOSIMETRY REVIEW VISITS [CONT'D]

- Treatment planning capability
- Image guidance, patient alignment
 - Evaluate imaging system with IGRT phantom
- QA Procedures
 - Daily
 - Monthly
- Treatment record review



Thursday, January 15, 2009