



CIRMS

Council on Ionizing Radiation Measurements and Standards

Caswell Award

October 2010

Early Interest in Physics

- Father introduced me to study of inelastic collisions, conservation of energy



Acknowledgements

- Larry DeWerd
- Tony Berejka

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- Bill Hendee



First project



- Characterize Madison Research TLD reader
- Measure %dd in cobalt beam

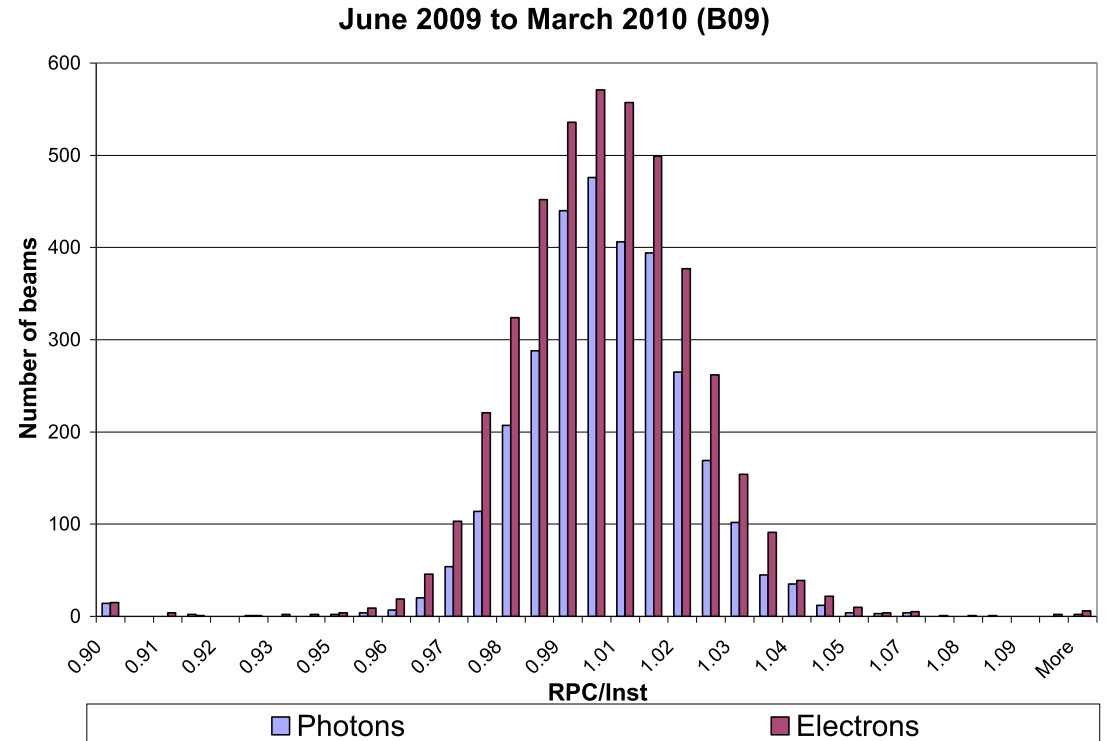
Research Interests in Clinical Dosimetry

- Patient dosimetry
- Calibration standards
- Laboratory accreditation
- Independent dosimetry audits
- Radiological Physics Center grant



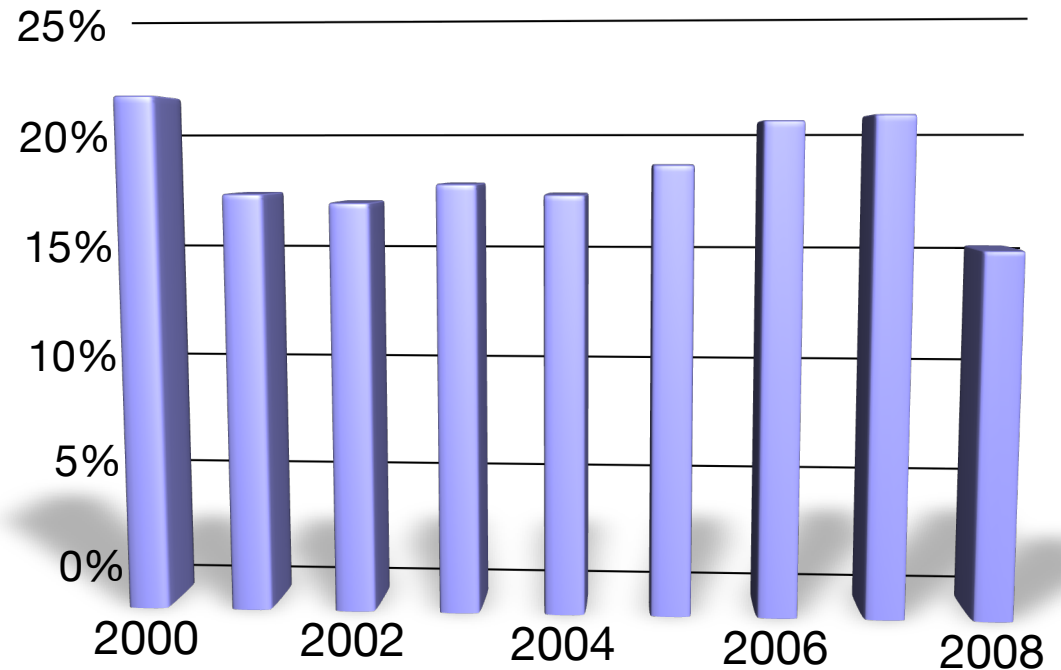
Annual Audits of Treatment Machine Calibration

- Mean ~ 1.00 , sd $\sim 2\%$
- $\sim 5\%$ measurements outside acceptable range



Annual Audits of Treatment Machine Calibration

- Mean ~ 1.00 , sd $\sim 2\%$
- $\sim 5\%$ measurements outside acceptable range
- $\sim 15\%$ of facilities have ≥ 1 beam outside acceptable range



Audits of Advanced Technologies

- IMRT phantom for credentialing for clinical trials
- Institutions treat phantom as if it were a patient



Audits of Advanced Technologies

- 20 – 30% of facilities do not deliver dose distribution that matches their own treatment plan



Public interest in treatment quality and safety

The New York Times **Health**

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THE RADIATION BOOM

Radiation Offers New Cures, and Ways to Do Harm

By WALT BOGDANICH
Published: January 23, 2010

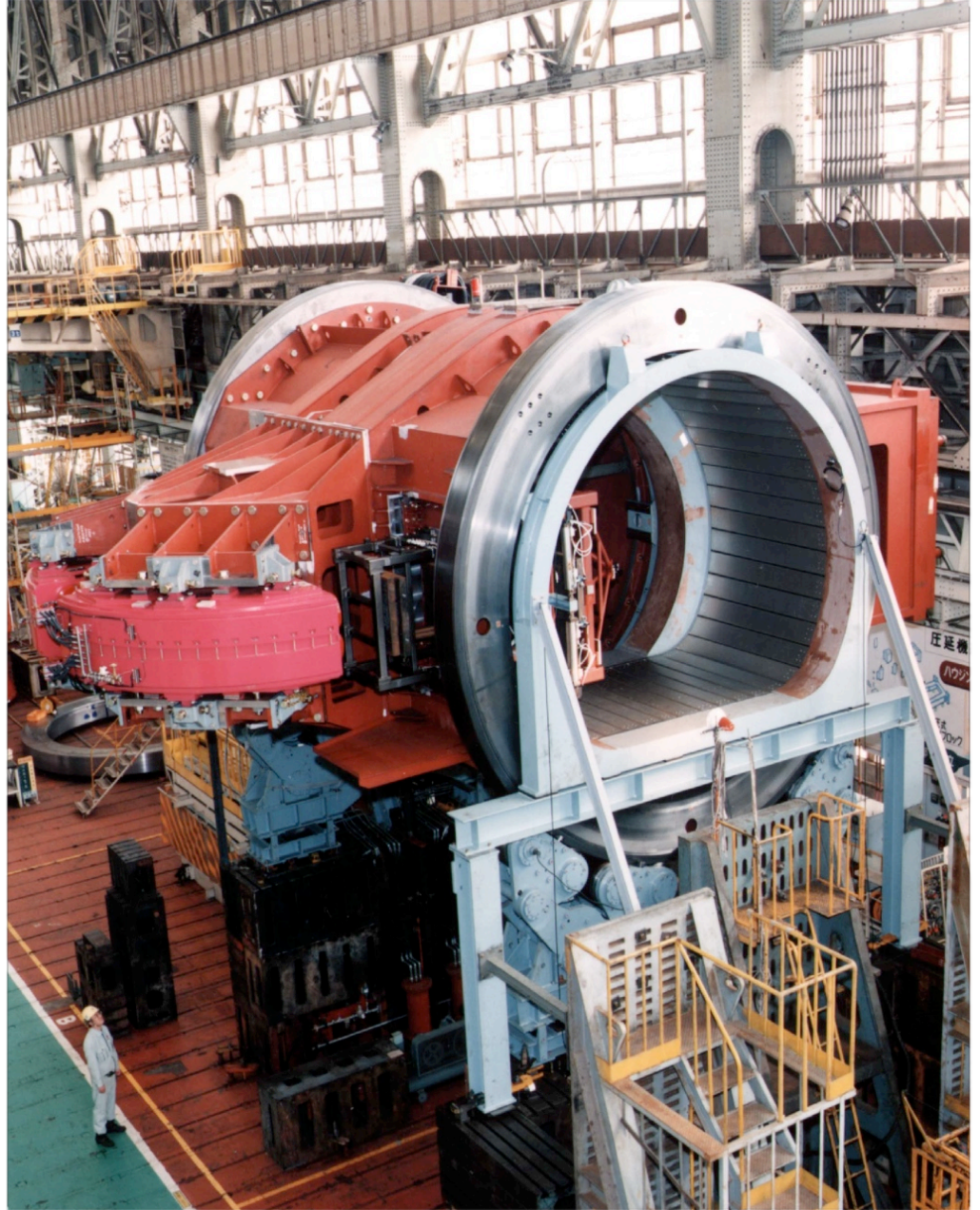
SIGN IN TO

Public interest in treatment quality and safety

- New York Times articles portrayed RPC as quality auditors

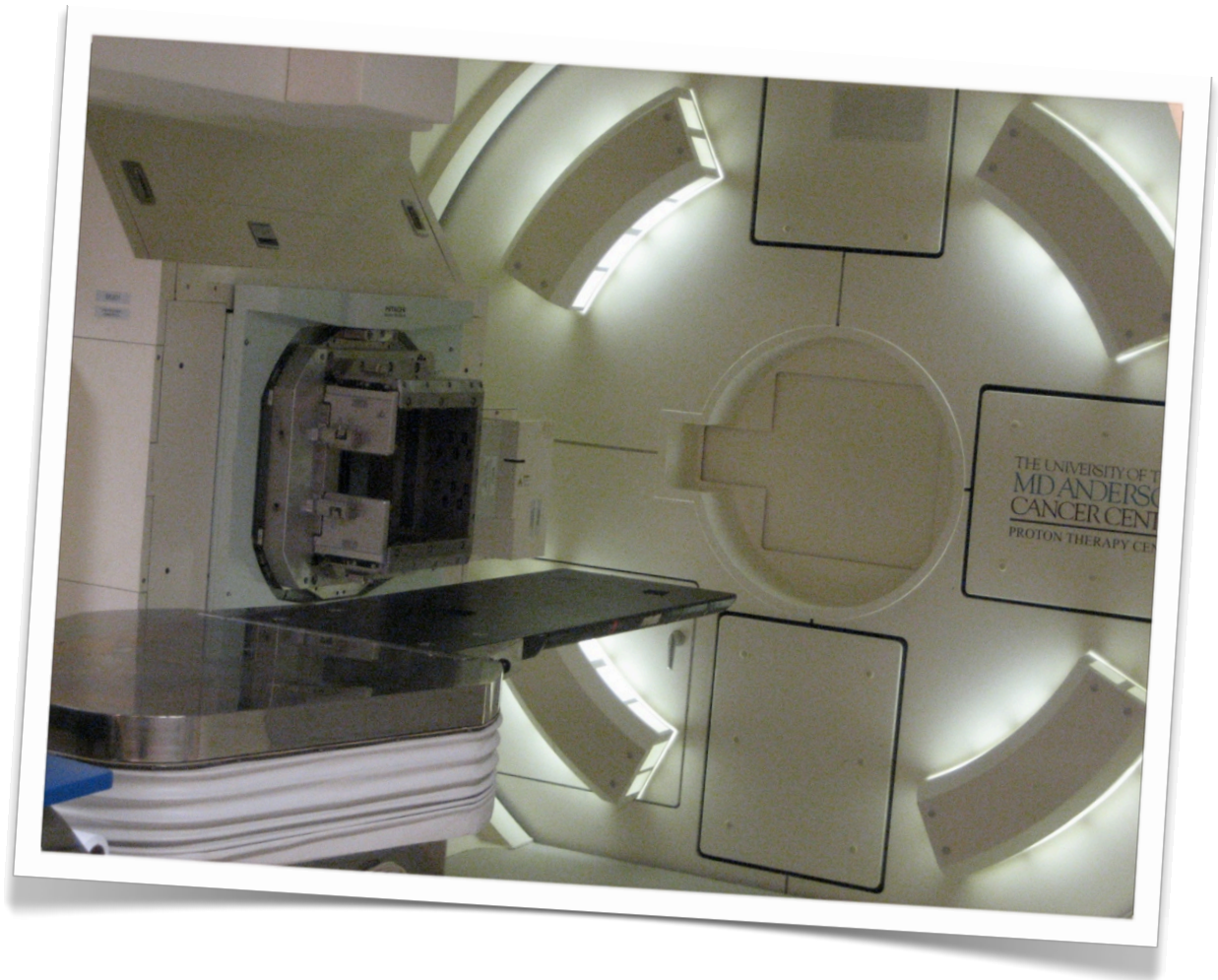


Recent
focus:
Reference
dosimetry
and audits
of proton
facilities



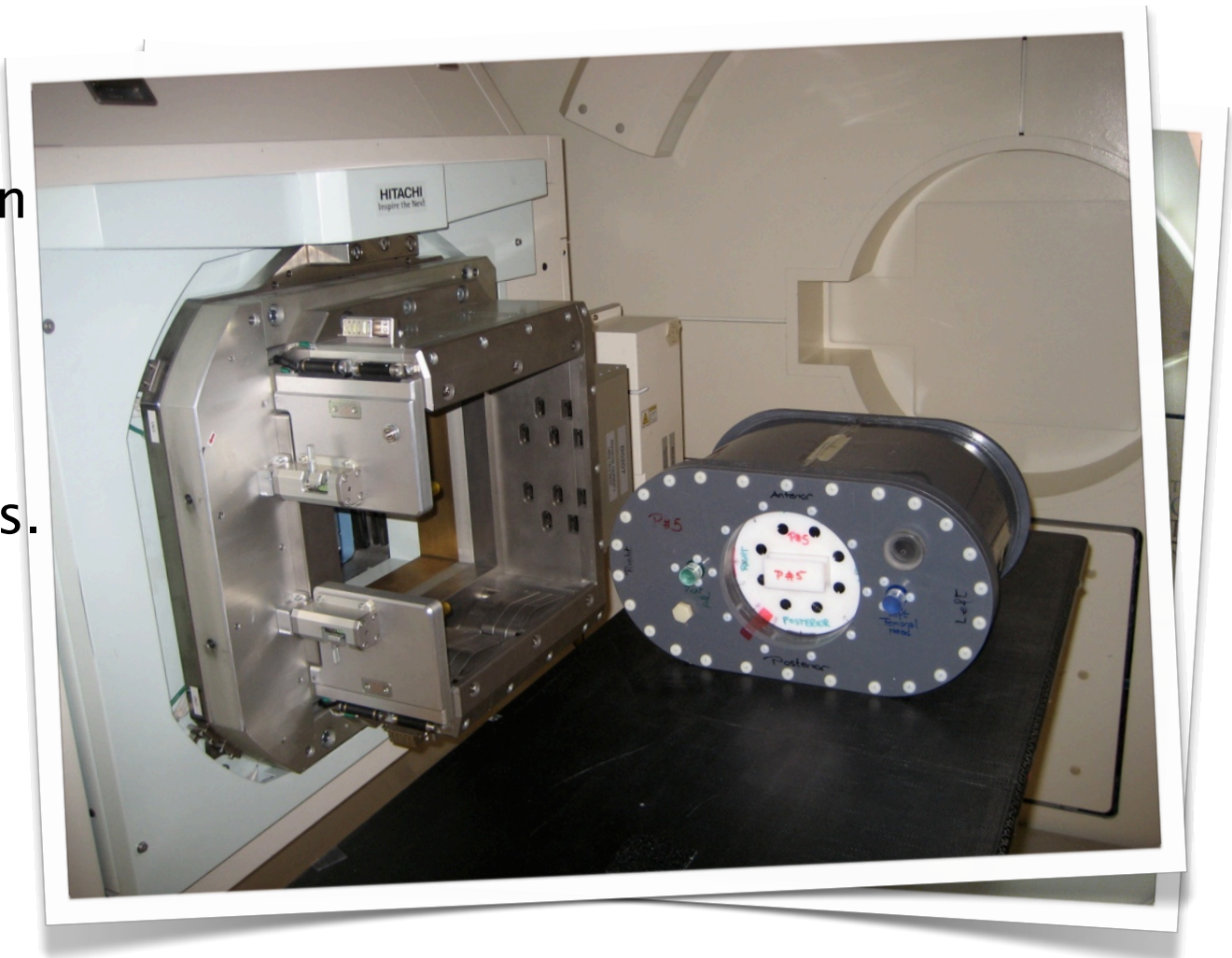
Quality Audits at Proton Facilities

- Measurements with ion chambers, anthropomorphic phantoms
- 3D dosimetry with gels. Presage



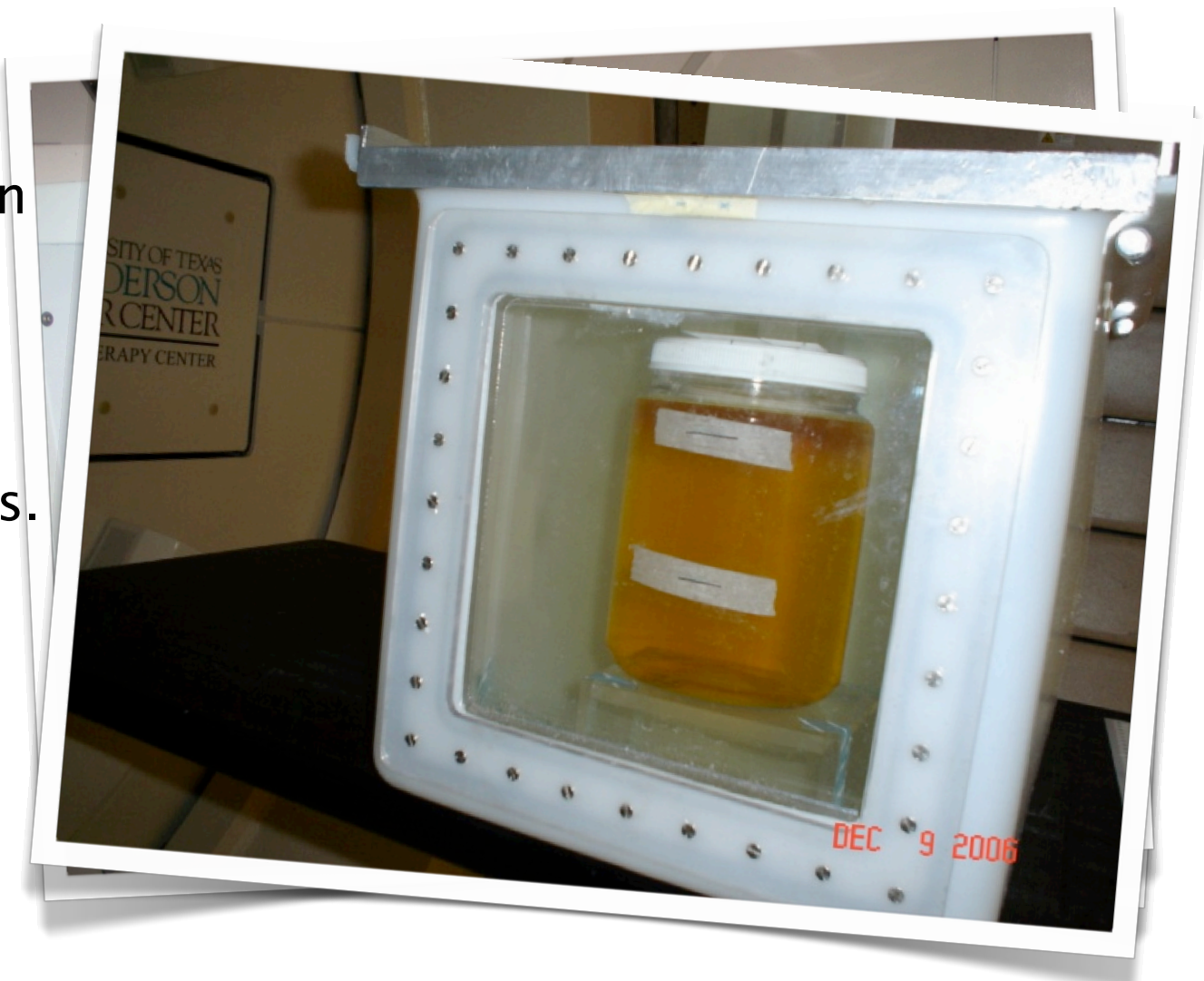
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With thanks



...to CIRMS,
Randall S. Caswell,
NIST staff, and
Colleagues