CIRMS, The Bureau, and me

or

40 years of Boondoggles and Fiascos

- Boondoggle – You're invited to give a talk someplace nice, like the south of France, and they pay your expenses, applaud when you finish, take you out to dinner, and you manage to get an upgrade on your flight back

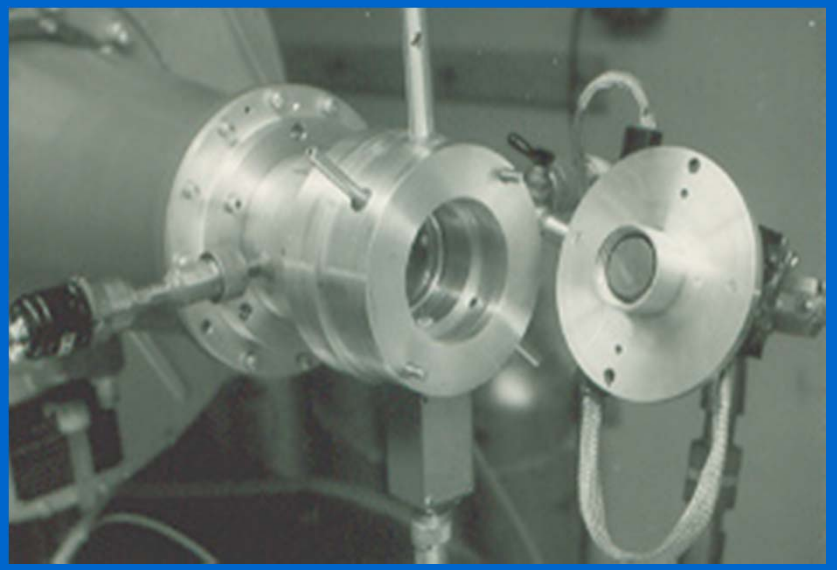
- Fiasco – You ship your equipment to another lab, set it up, turn it on and find out one critical, irreplaceable part doesn't work, and can't be fixed, but maybe you get some data…maybe you don't… and all your return flights are delayed by weather or mechanical problems

My first job as a physicist was with Columbia University's Hudson Laboratories

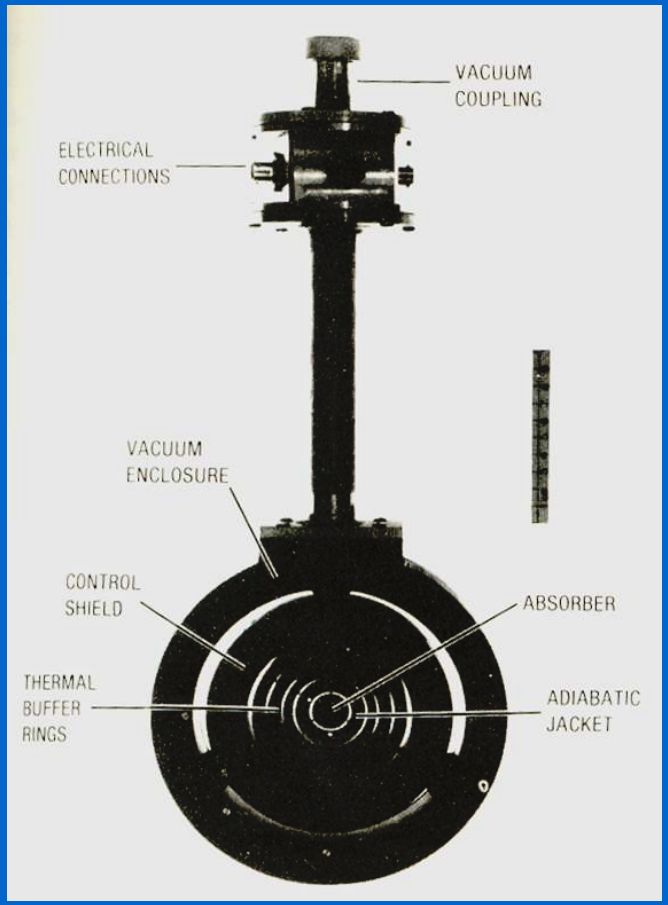
We did underwater acoustics studies for the Office of Naval Research

With Hudson Labs closing I needed a job
I was lucky to get a position at MSKCC in 1968

- At MSKCC in New York City, I worked for John Laughlin
- I learned a lot about ionizing radiation measurements
- Thin foil calorimeter for → 6 ns pulses of 600-keV electrons, doses of several kGy



Yes, that is a younger version of me and my TE plastic calorimeter



The Bureau

- I used to visit Steve Domen to talk about calorimetry down in B10, Bldg. 245
- Steve was a good mentor who taught me a lot about, heat loss, the emissivity of aluminized Mylar, and the Reynolds number
- He also told me about a number of good places for boondoggles like Gumpoldskirchen, Gif-sur-Yvette, and Shepperton

Steve and I shared a Fiasco at LANL

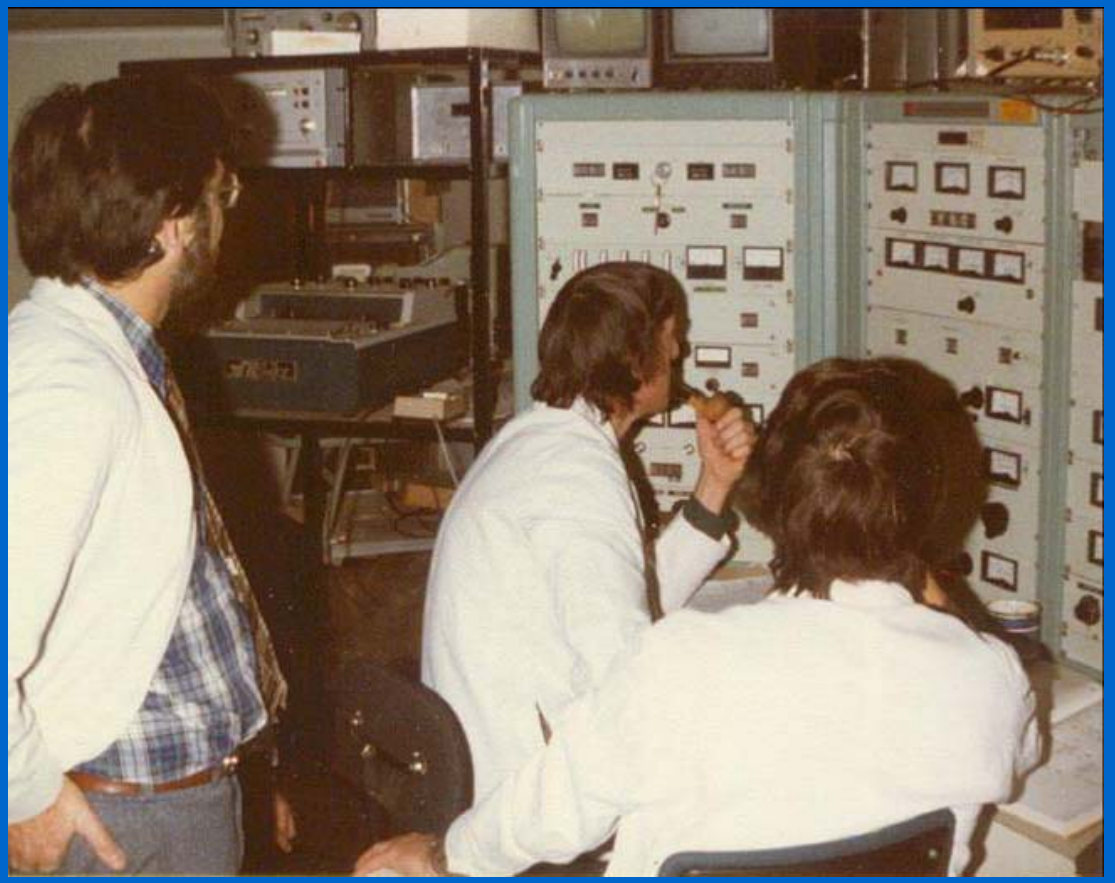
We brought our calorimeters to measure dose in the π^- meson radiotherapy facility

When we arrived our host said “Sorry boys the beam is down. Pack up your gear tomorrow and head back home”

I won’t tell you what Steve and I did that evening

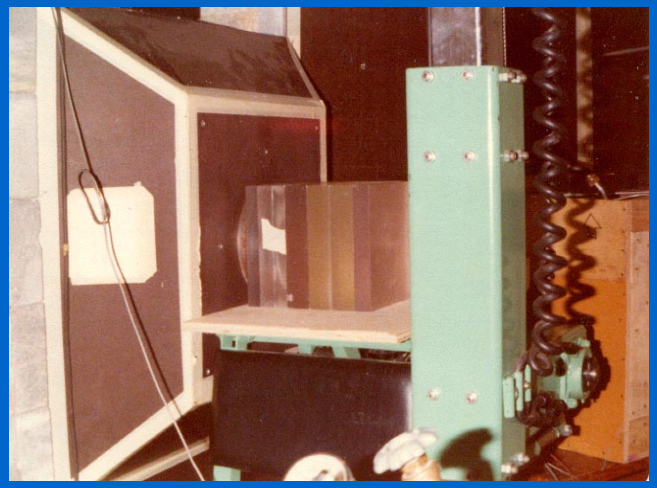
I did some calorimetric measurements of $S \cdot W_n/e$ at the Gray Laboratory

Barry Michael and crew betting on how much power the target could take



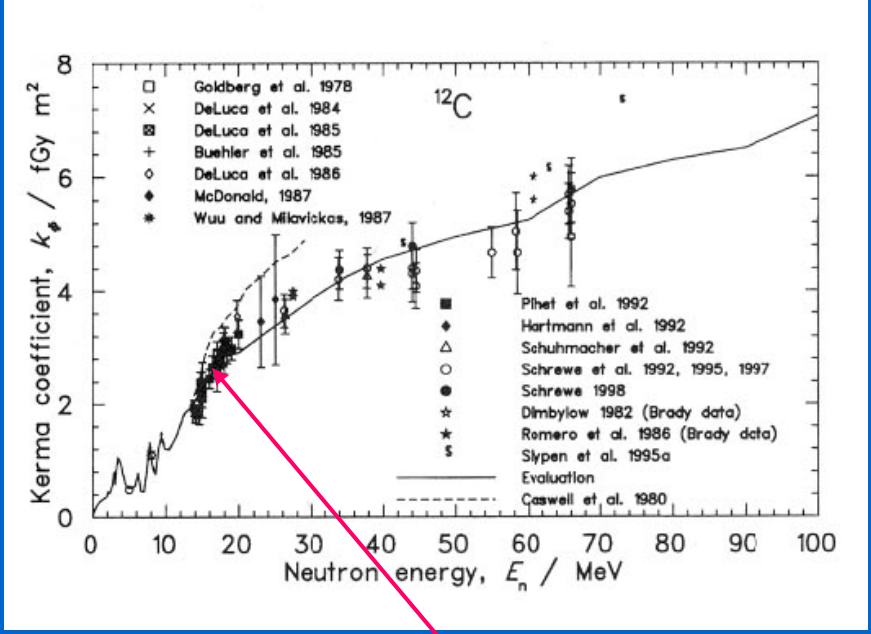
Did a lot of measurements of dose in fast neutron and charged-particle beams

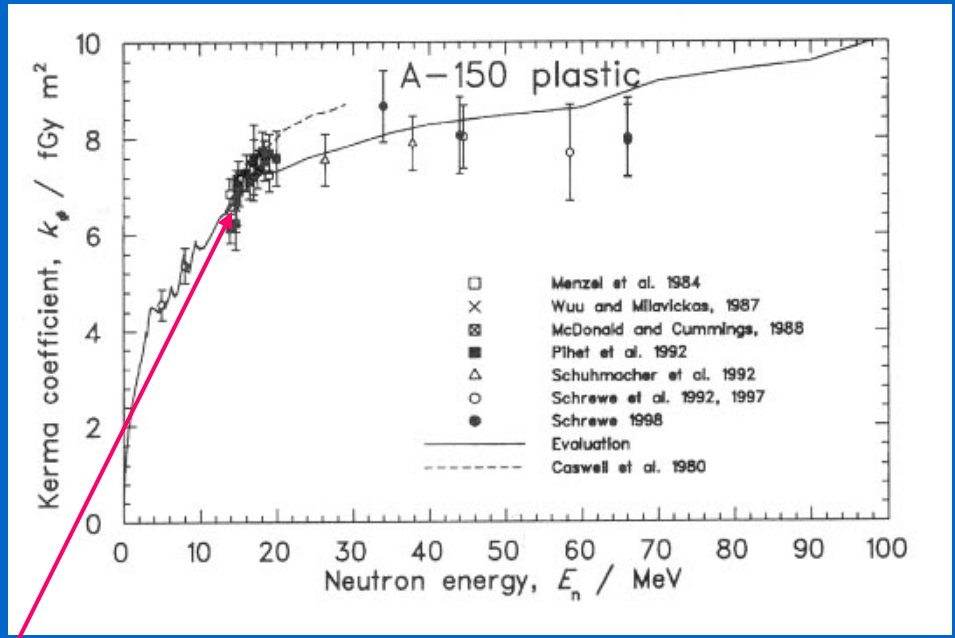
- That meant a lot of traveling
- A lot of frequent flyer miles
- Some fiascos
- A lot of data



Data from a couple of my calorimetry measurements went into ICRU 63

Nuclear Data for Neutron and Proton Radiotherapy and for Radiation Protection





You may need a magnifying glass to find them but they're in there

High-dose work with Bill McLaughlin

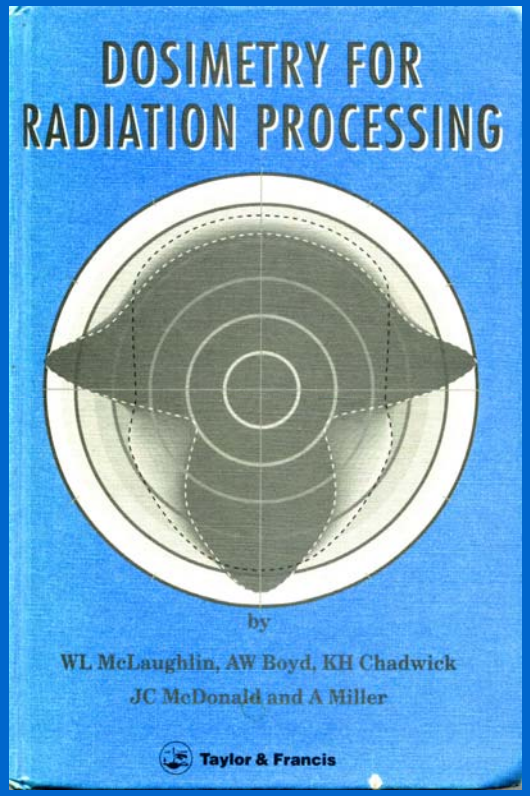
- Bill got me to work on ASTM committee E10.01 on high-dose dosimetry
- He also asked me to join an ICRU report committee on high-dose dosimetry
- Bill, Ken Chadwick, Arne Miller, Bill Boyd, and me

We met at some nice places

On the grounds of NPL
near “Newton’s Apple Tree”

For some reason the ICRU report wasn't published

- But, the work was not in vain
- Bill talked with Taylor&Francis and they published our report as a monograph
- Later Bill got ICRU 80 published with Rod Chu serving as Chair



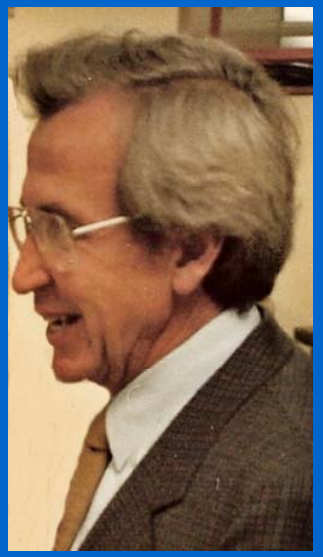
Some more high-dose work with a CIRMS member… Paul Farrell

- Paul,Trevini Rao (BNL), and I worked on a compact electron accelerator
- We got some funding from DOE and did some work and published some papers

5 MV Pulsed Power Supply System

Working with Randy and Joe Coyne

- I did some work on neutron kerma coefficients and microdosimetry with Randy and Joe Coyne
- It was great to work with them, and I spent many happy times at “Casa Coyne”
- They both taught me a lot



Something Joe told me a long time ago

- I visited Joe and told him I wanted to compare my microdosimetric measurements to his calculations to see if they were right
- Joe immediately said to me: "You've got it wrong, I want to compare my calculations to your measurements…to see if my calculations are right"

Travels with a Tissue-Equivalent Proportional Counter (TEPC)

- Made some measurements of lineal energy distributions from medium-energy neutrons at:

  Ohio University

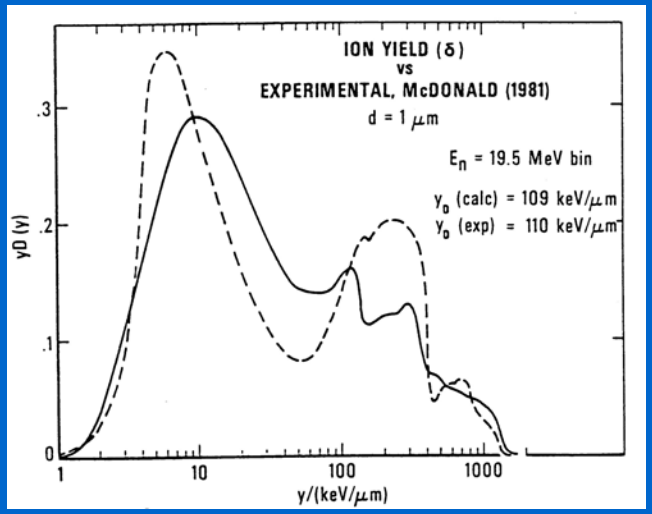
  University of Michigan

  Los Alamos

  NIST

  CEA-Cadarache Laboratory

  And a few other places



Got one data point in ICRU Report 36

Microdosimetry

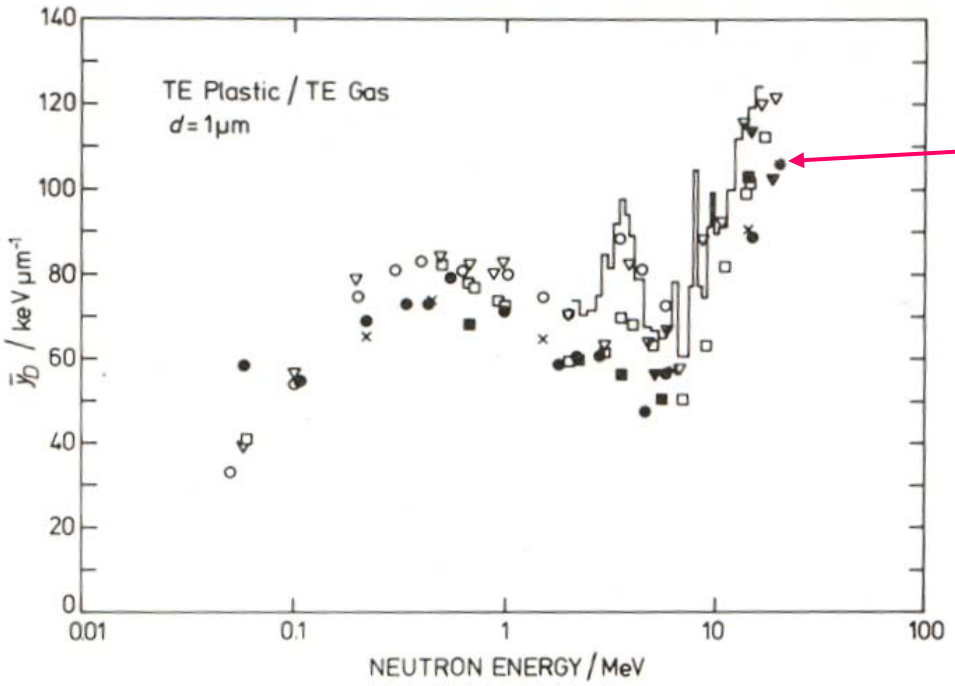


Fig. F.5. Experimental (solid symbols) and calculated (open symbols) values of $\bar{y}_D$ of fast neutrons for tissue equivalent spherical counters of 1 μm simulated diameter as a function of neutron energy. ○, Booz and Coppola (1974b); ▽, Caswell and Coyne (1978); ■, Lavigne (1978); ∗, McDonald *et al.* (1981); ▼, Menzel and Schuhmacher (1981b); □, Nguyen *et al.* 1981); ●, Rodgers and Gross (1974); and x, Srdoc *et al.* (1981). The solid line represents bin averaged values from Coyne and Caswell (1981).

It's not easy to find, but that's one of my points too

One of my microdosimetry measurement trips was a bomb

Little Boy on Tinian

Some fun under the New Mexico sun

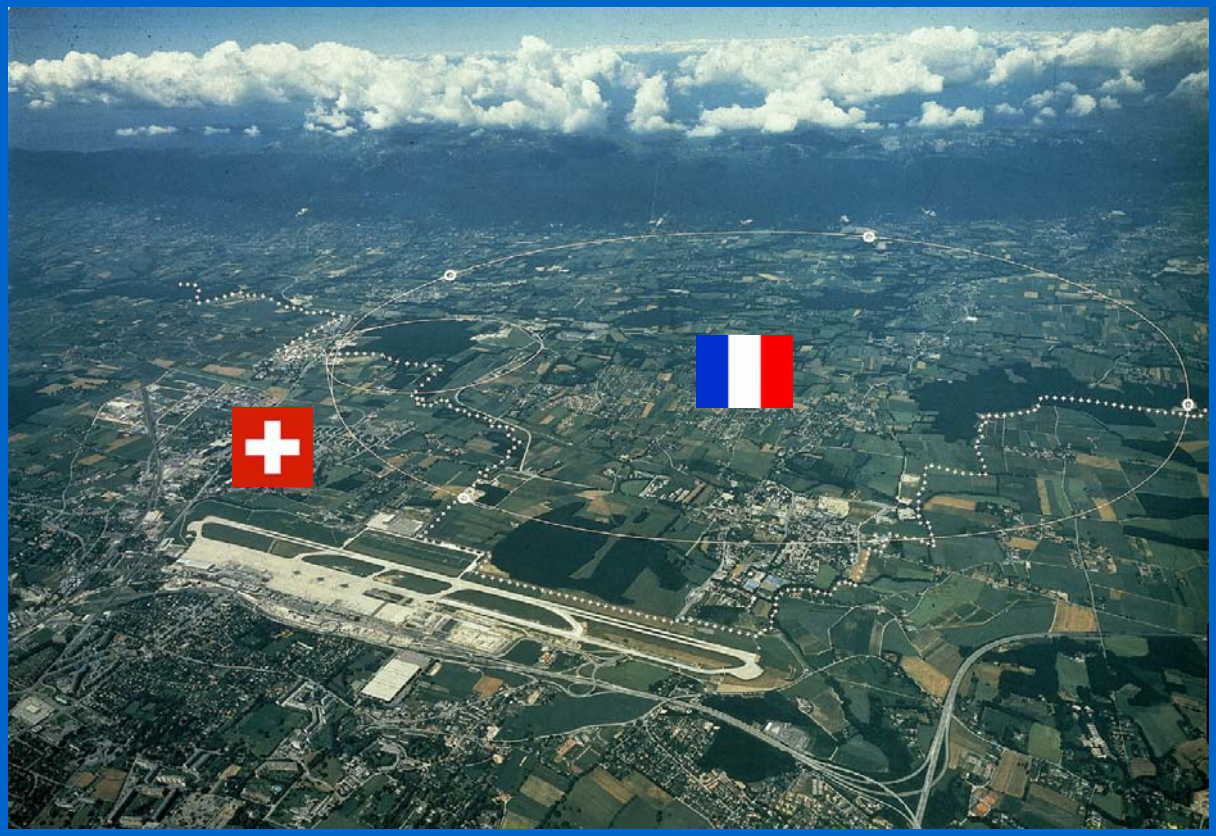
Little Boy Replica in TA-18, Pajarito Canyon

CIRMS folks, The Bureau and PNL

- At PNL I worked for Bob Loesch and we did DOELAP testing
- Also worked with Elmer Eisenhower and Tom Heaton for NVLAP
- Bob got DOELAP to use a revised ANSI N13.11 standard
- Chris Soares who chaired the N13.11 revision committee helped to make that happen

We did some work at CERN

(It had nothing to do with the Higgs Boson)



It was an accelerator dosimeter comparison exercise

Some work for personnel dosimetry

- At PNL Steve Miller, Fred Eichner and I worked on optically stimulated luminescence
- We had a couple of patents and got an R&D 100 Award
- Steve worked with Craig Yoder to help develop the Luxel OSL dosimeter for Landauer

ISO and ICRU meetings, and measurements, at CEA-Cadarache

Great place for a boondoggle – A story later if time permits

ISO Standards for Neutron Dosimetry

- A number of people from national standards laboratories worked on ISO standards
- Bob Schwartz, Charlie Eisenhauer, and I worked on on the neutron reference radiations subgroup
- We developed ISO 8529-1,-2,-3 and 12789 some of us also worked on an ICRU report

ISO and ICRU committee members at Cadarache

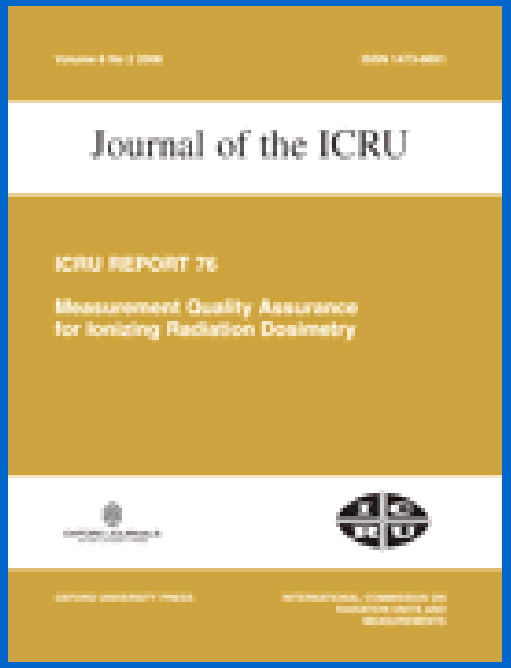
The ISO crew also worked on ICRU 66

- *ICRU Report 66 - Determination of Operational Dose Equivalent Quantities For Neutrons*
- Wolfgang Alberts, David Bartlett, Jean-Louis Chartier, Ross Hirning, Hans Schraube, Bob Schwartz and me

And some of them worked on another ICRU Report

- *ICRU Report 76 - Measurement Quality Assurance for Ionizing Radiation Dosimetry*
- David Bartlett, Elena Fantuzzi, Peter Ambrosi, Penny Allisy-Roberts, Larry DeWerd, Bert Coursey*, and me

*Part timer



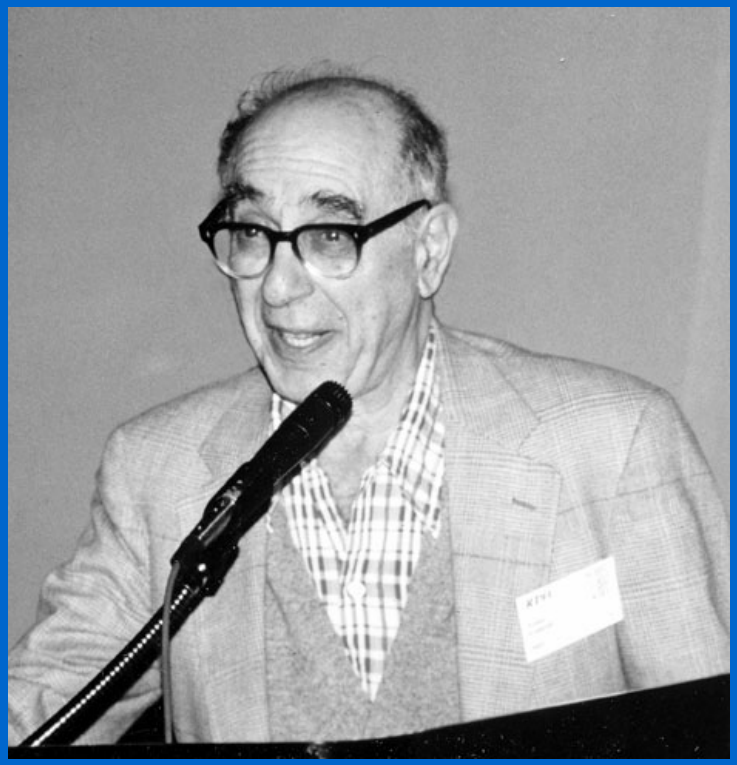
Did a little “part-time” work for Bert and DHS

- A group of us wrote four ANSI testing standards for DHS, that normally take a *minimum* of 3-years to publish… in 1 year

Question: How can you do that?

Answer : Lou Costrell

Founder IEC TC 45
ANSI N42
Member ANSI NSB
Developed NIM Standard



And master at shepherding standards through the system

A lot of people did a lot of hard work on the DHS standards and the testing

- Mike Unterweger, Leticia Pibida, Morgan Cox, Peter Chiaro, Pam Greenlaw, Gladys Klemic, and Bert
- And a lot of people at the DOE National Labs: LANL, LLNL,ORNL, PNNL

PNNL Guys

We also wrote an article about some of the DHS work for “Physics Today”

- Bert, Mike Carter, and I worked on a general write-up of work done by DHS on detection of illicit radioactive sources
- We described the basics of the program
- A lot of the DHS work was difficult, but….

Detecting Illicit Radioactive Sources

Drawing on technologies from fields as diverse as space physics and nuclear medicine, scientists are fast developing instruments to search for material that terrorists might use to fashion dirty bombs or a nuclear device.

Joseph C. McDonald, Bert M. Coursey, and Michael Carter

number materials will have a higher probability of detection due to their longer ranges.

The US, Russia, and other nations store large quantities of special nuclear materials (SNMs)—fissionable radionuclides such as ^{239}Pu and the 233 and 235 isotopes of uranium—in protected locations, although the threat

We did have a little time for R & R

Heuriger at Gumpoldzkirchen, Austria
after a long meeting at the IAEA

Summing it up

- I was smart enough to marry Virginia 44 years ago
- Worked with NIST and CIRMS folks
- Did lots of measurements, wrote a bunch of papers, worked on standards, did some teaching, still RPD Editor
- Have a few data points in ICRU Reports, worked on a couple of other ICRU reports
- Worked on CIRMS Needs Reports, Served as VP, President, Chaired meeting sessions, Gave some talks, Got a lot of help from Katy Nardi

My thanks to you all for remembering me – and giving me a chance to talk about a lot of my favorite people in…

CIRMS and The Bureau