

SOME OLD MINOS TRANSPARENCIES:

CONCLUSION:

NO SCINTILLATOR-FIBER OR
SCINTILLATOR-PVC INTERACTIONS
SEEN WITH BC 517L MINERAL OIL
SCINTILLATOR.

ALSO. K.G. YOUNG ET AL, RADIAT. PHYS. CHEM. 41, 215
(1993)

INFER LIFETIME ~ 15 YRS FOR SINGLE
CLAD FIBERS:

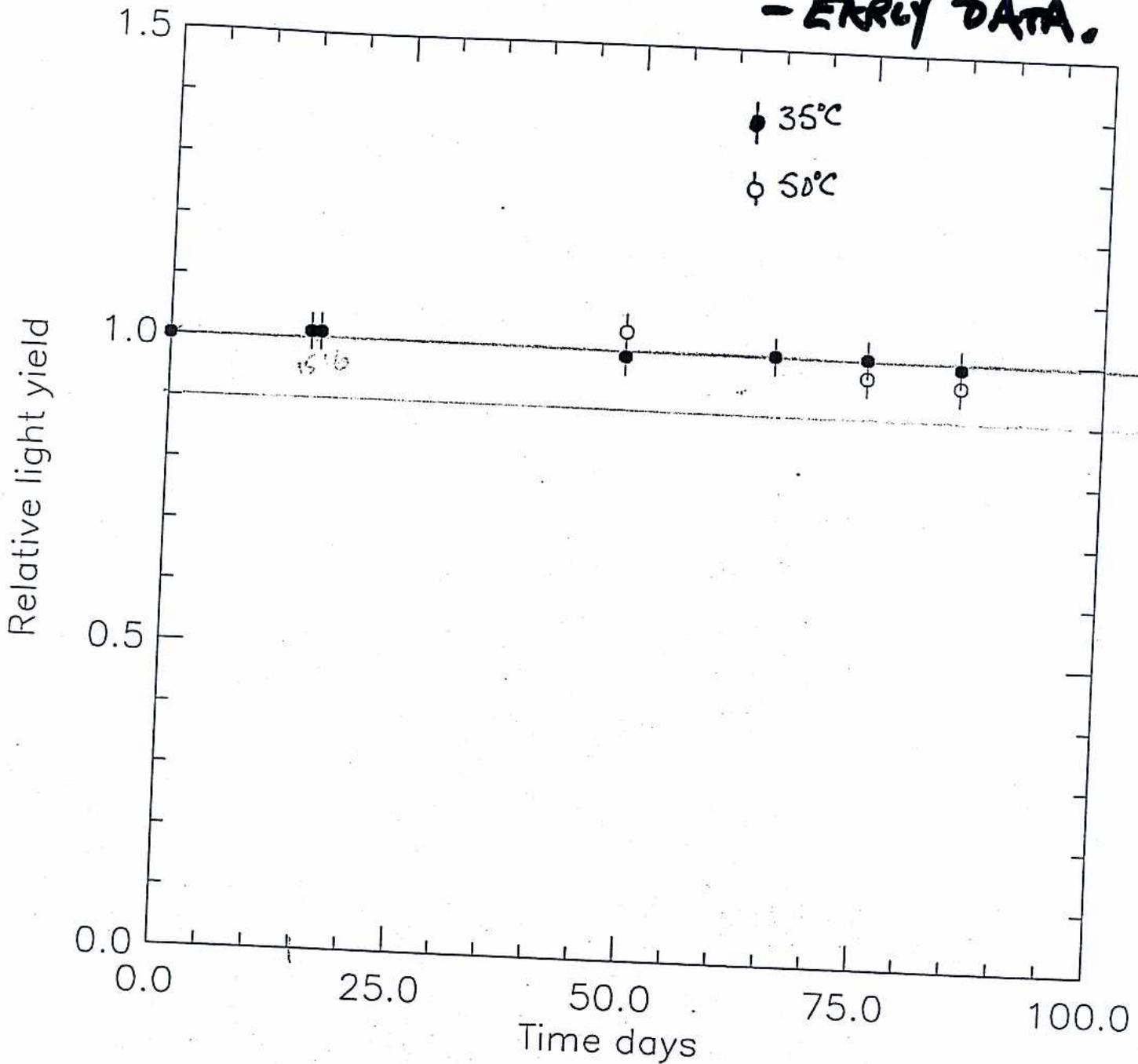
THEY MEASURED $\tau = 16$ days, 6 hours
FOR FIBERS IN 517H AT 22°C , 42°C ,
GIVING AGING FACTOR ~ 64 .

- ALSO $\tau = 90$ days for 517L at 42°C
 $\Rightarrow \tau$ at $22^\circ\text{C} = 90 \text{ days} \times 64 \sim \underline{16 \text{ YR}}$
(τ WAS TIME TO OBSERVABLE EFFECT?)

SCINT-PVC INTERACTION?

"CONTACT AREA/VOLUME OF SCINT
 $\approx 4:1$ MINOS

- EARLY DATA.



Scintillator/fiber interaction?

Multiclad fibers consist of

- inner core (0.9 mm diam): polystyrene + WLS; $n = 1.59$
- PMMA (acrylic) cladding ($\sim .025$ mm thick); $n = 1.49$
- outer cladding polyfluor ($\sim .025$ mm thick); $n=1.42$

Essentially all liquid scintillators dissolve polystyrene at some level, but at highly varying rates

None react with PMMA or polyfluor (in principle)

Must investigate possible flaws in the cladding and determine whether or not there is a finite reaction rate with the cladding?

- Microscopic studies
- Quality assurance questions in initial fiber preparation
- Place all fibers in fast-acting scintillator for 1 month before use

Note: No significant effect has been observed with fibers in BC517H scintillator for 1 year.

3. Fiber/scintillator

- **No effects (<5%) observed on:**
 - multiclad fibers at 50°C for 8 months**
 - fiber sanded to expose core for > 2 years**
 - polystyrene sample at 20°C for > 2 years**
- **Results from ECAL after 2 years:**
 - no change in light yield**
 - (fibers are SINGLE clad, ends unsealed!)**
- **SSC paper infers > 15 years**
 - for single clad at 22°C**
 - (Radiat.Phys.Chem, Vol 41,215 (1993))**

**WE HAVE OBSERVED NO INTERACTION
BETWEEN 517L SCINTILLATOR AND THE
COMPONENTS OF THE DETECTOR.
NO PROBLEMS OVER FORESEEABLE
LIFETIME OF MINOS.**

ECAL (R. RUSACK)

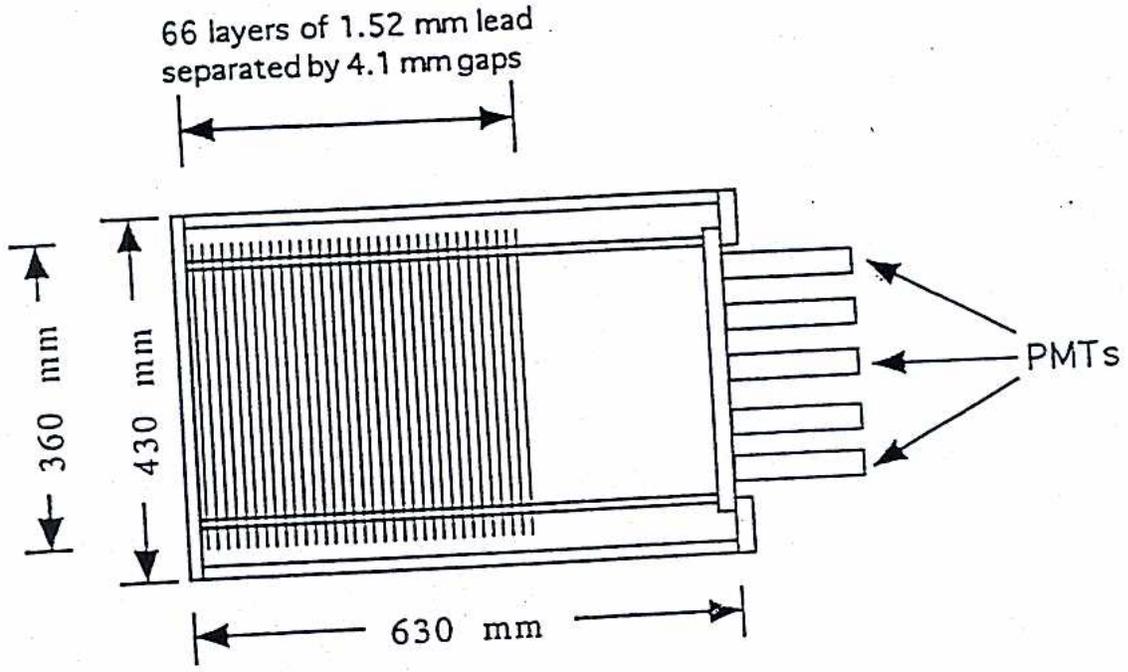


Figure 1: A schematic illustration of the calorimeter.

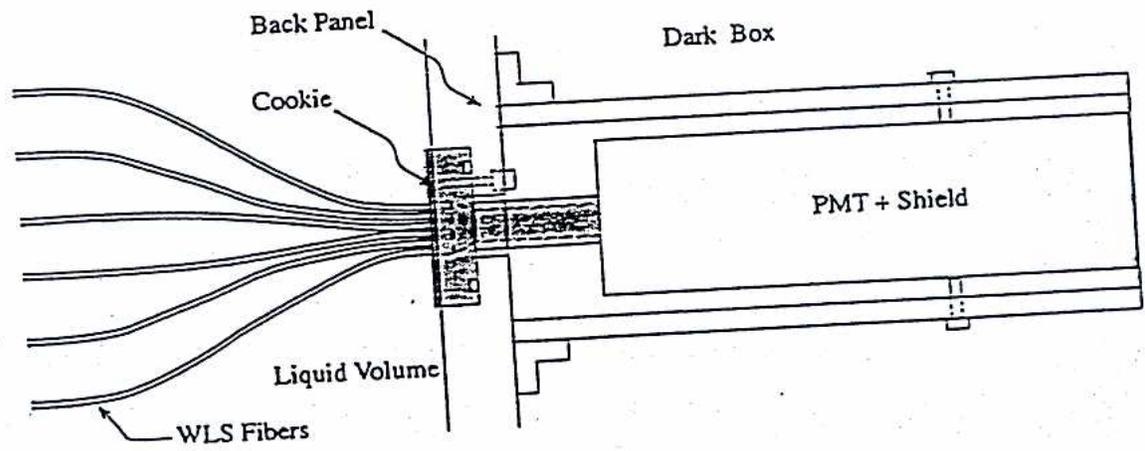
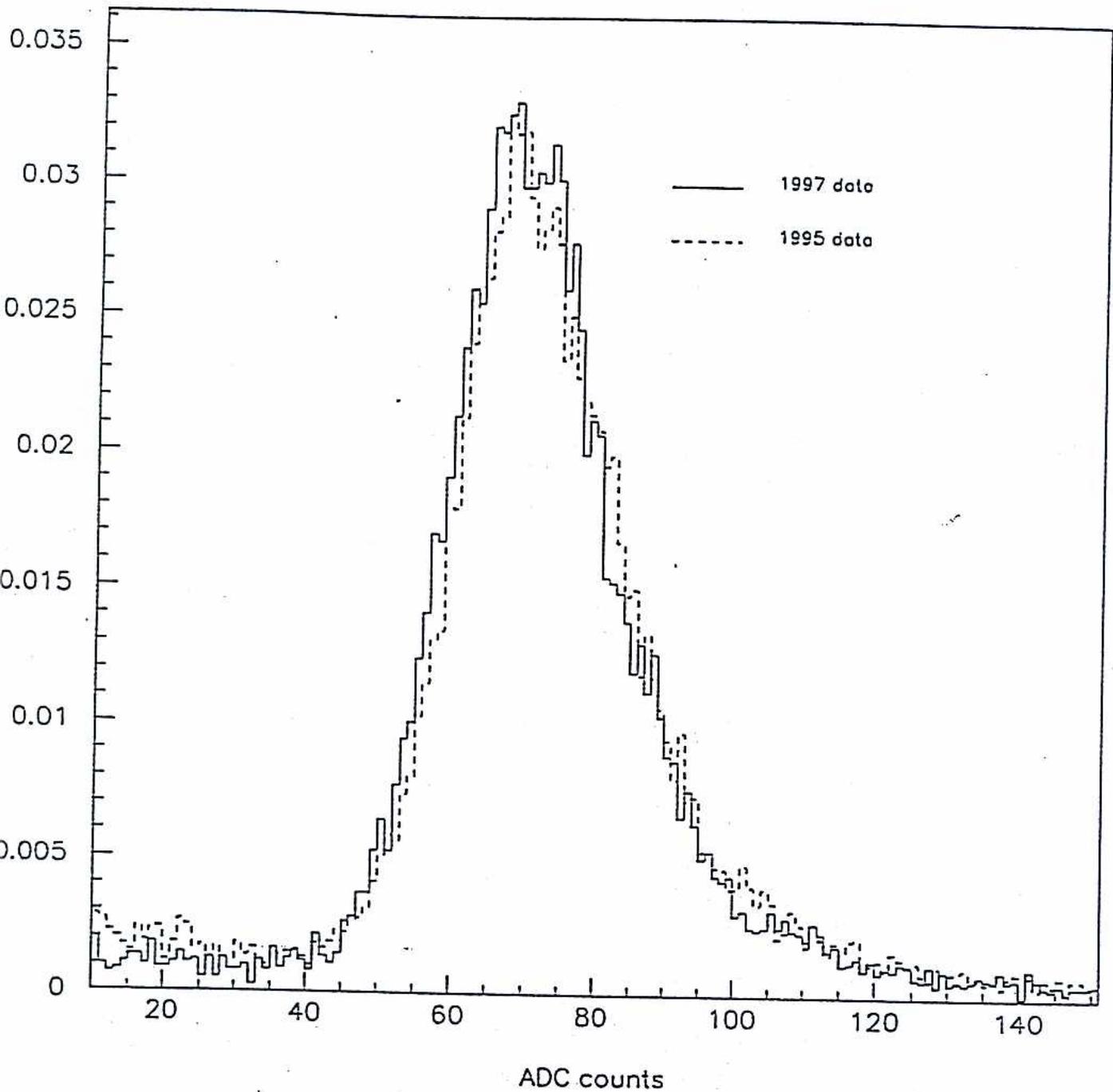


Figure 2: Schematic showing the fiber, cookie and PMT mounting.

VERTICAL MUONS



WILL GET NEW DATA SOON (2005!)
— THAT'LL BE 10YRS SINGLE
CLAD FIBERS IN S17L