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# TEMPERATURE MEASUREMENT OF TUNGSTEN AND BERYLLIUM TARGETS IN AIR

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AGS DIVISION TECHNICAL NOTE

#### <u>No. 83</u>

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TEMPERATURE MEASUREMENT OF TUNGSTEN AND BERYLLIUM TARGETS IN AIR

We have measured the equilibrium temperature change in air of two typical external beam targets exposed to 28 GeV protons. Iron/Constantan thermocouples of 30 gauge wire were used with the reference junction at ambient temperature. The proton beam pulse duration was  $\sim$  400 msec with a 2.4 sec repetition period. The results and some target characteristics are shown in the table. The time constants,  $\tau$ , are only approximate.

Tgt	∆T eq./10 <sup>12</sup> ppp	Cross Section	L, length	т	ρL	ρL dE/dx/Proton
B <sub>e</sub> ,	30 <sup>0</sup> C	.1" x .2"	4.72"(12 cm)	≤3 min	22 g/cm <sup>2</sup>	40 MeV
W	260 <sup>0</sup> C	.1" x .2"	2.5"(6.3 cm)	pprox 1.5 min	122 g/cm <sup>2</sup>	180 MeV

Drawings of the target and thermocouple details are shown in the figures. Note that the tungsten target head was separated from its holder by a .040" mica washer, but attached to the holder by stainless steel screws.

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