

Accelerator Department
 BROOKHAVEN NATIONAL LABORATORY
 Associated Universities, Inc.
 Upton, New York

AGS DIVISION TECHNICAL NOTE

No. 83

L. Repeta and G. Bennett

December 2, 1970

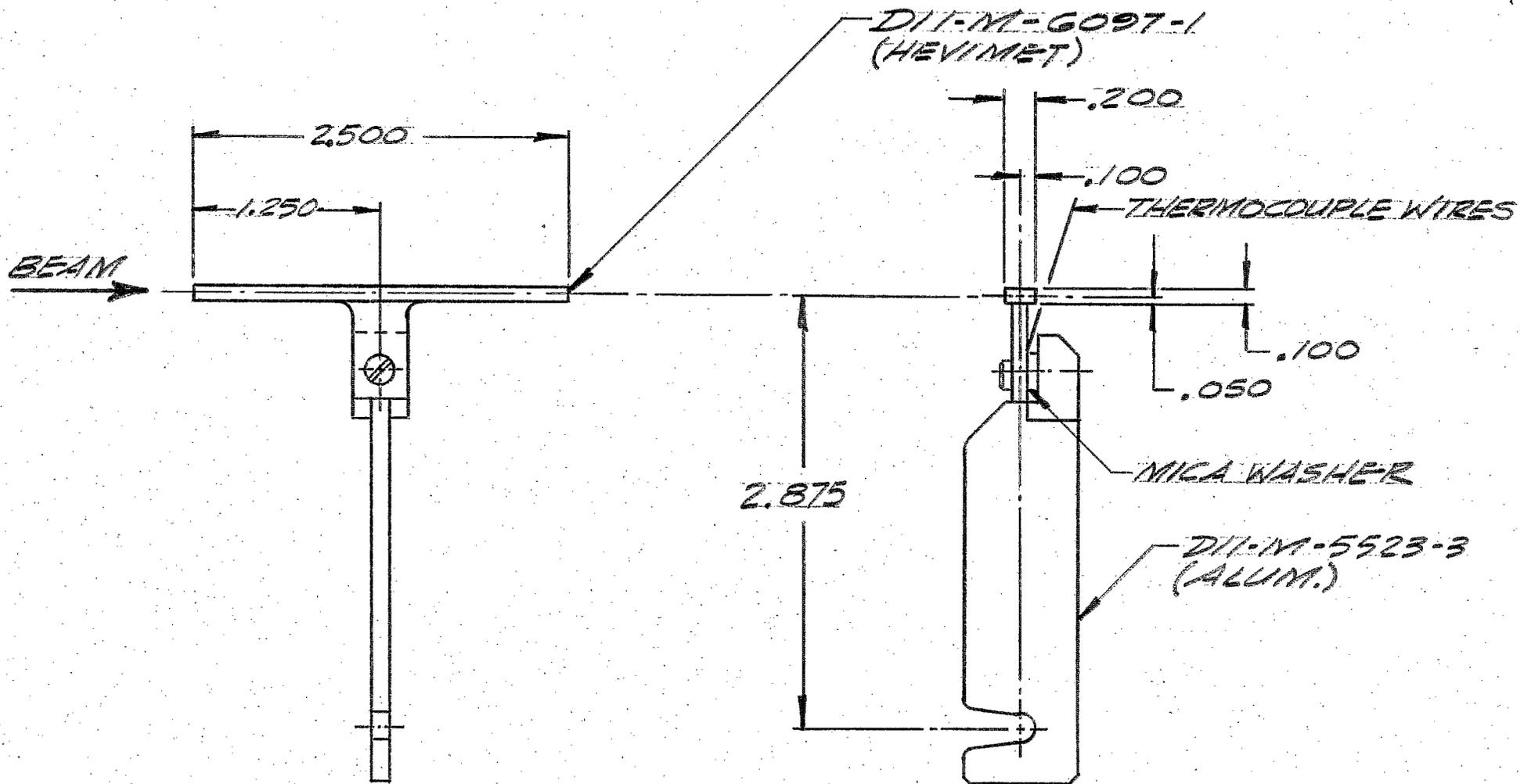
TEMPERATURE MEASUREMENT OF TUNGSTEN AND BERYLLIUM TARGETS IN AIR

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 ~ 400 msec with a 2.4 sec repetition period. The results and some target characteristics are shown in the table. The time constants, τ , are only approximate.

Tgt	ΔT eq./ 10^{12} ppp	Gross Section	L, length	τ	ρL	ρL dE/dx/Proton
Be	30°C	.1" x .2"	4.72"(12 cm)	≤ 3 min	22 g/cm ²	40 MeV
W	260°C	.1" x .2"	2.5"(6.3 cm)	≈ 1.5 min	122 g/cm ²	180 MeV

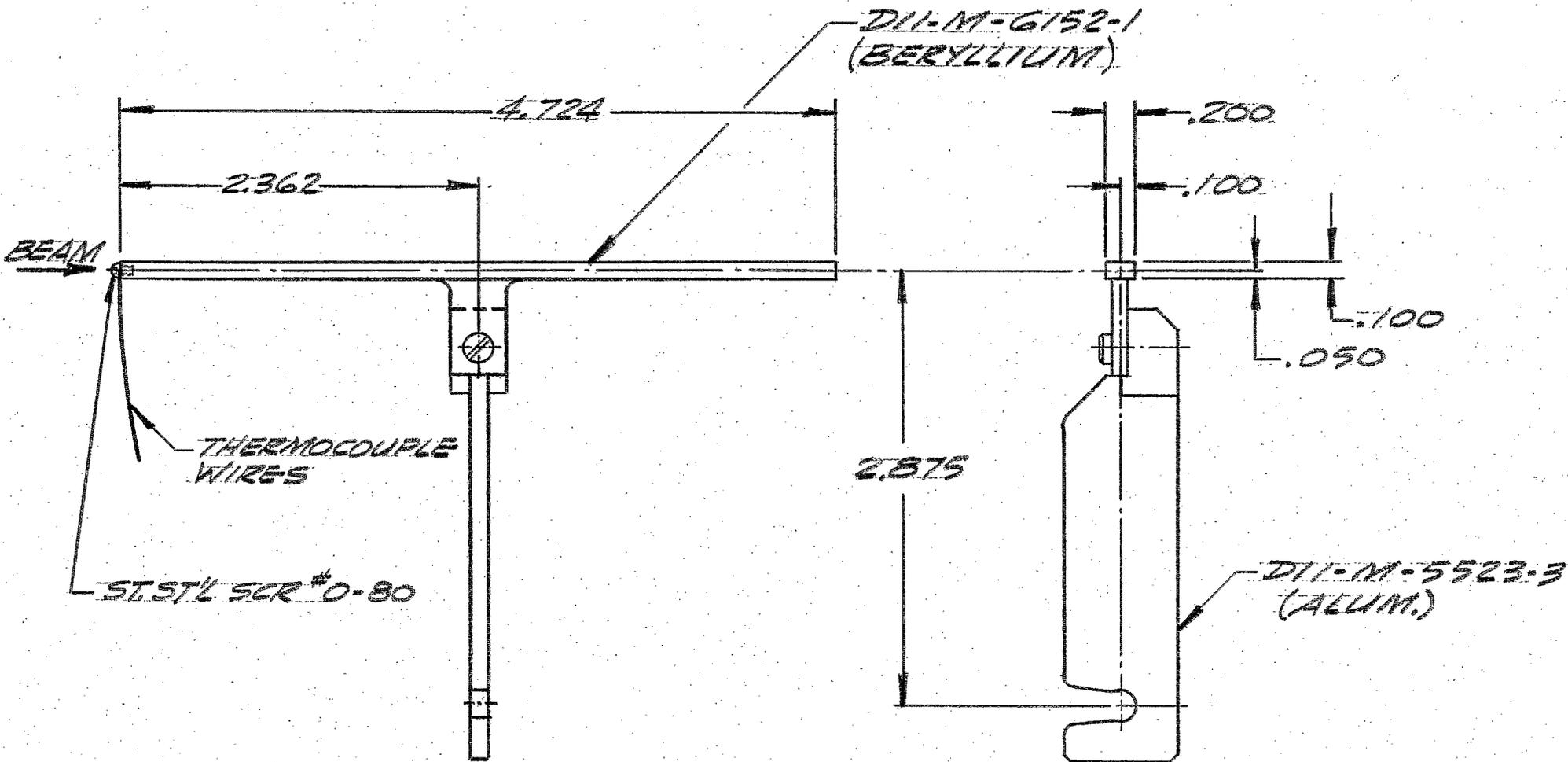
Drawings of the target and thermocouple details are shown in the figures. Note that the tungsten target head was separated from its holder by a .040" mica washer, but attached to the holder by stainless steel screws.

Distr.: Department Administration
 AD Physicists
 AD Engineers



SLOW EXTERNAL BEAM HEVIMET TARGET CONFIGURATION
 USED WITH TARGET TURRET DII-M-5227-5

FIGURE 1



SLOW EXTERNAL BEAM BERYLLIUM TARGET CONFIGURATION
 USED WITH TARGET TURRET D11-M-5227-5

FIGURE 2