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, \( \tau \), are only approximate.

<table>
<thead>
<tr>
<th>Tgt</th>
<th>AT eq./10^{12} ppp</th>
<th>Cross Section</th>
<th>L, length</th>
<th>( \tau )</th>
<th>( \rho L )</th>
<th>( \rho L dE/dx/Proton )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be</td>
<td>30°C</td>
<td>.1&quot; x .2&quot;</td>
<td>4.72&quot;(12 cm)</td>
<td>( \leq 3 ) min</td>
<td>22 g/cm²</td>
<td>40 MeV</td>
</tr>
<tr>
<td>W</td>
<td>260°C</td>
<td>.1&quot; x .2&quot;</td>
<td>2.5&quot;(6.3 cm)</td>
<td>( \approx 1.5 ) min</td>
<td>122 g/cm²</td>
<td>180 MeV</td>
</tr>
</tbody>
</table>

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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SLOW EXTERNAL BEAM HEVI-MET TARGET CONFIGURATION
USED WITH TARGET TURRET DI/M-5227-3

FIGURE 1
SLOW EXTERNAL BEAM BERYLLIUM TARGET CONFIGURATION
USED WITH TARGET TURRET DI-I-M-5227-5

FIGURE 2