REQUEST FOR ACTION (RFA) RESPONSE

GLAST LAT Project
Calorimeter Peer Review **17 – 18 March 2003**

Action Item:	CAL – 024
Presentation Section:	Detector Elements
Submitted by:	Rafe Schindler

Request: Crystal purity - To what extent is material purity (CsI salt) being monitored for impurities? Some impurities will not lead to radiation damage propensity, but may change relative fractions of each component time-constant, and also mechanical properties of crystals.

Reason / Comment:

Response: 8 May 2003, Staffan Carius, Leif Nilsson

Concerning the issue of how Amcrys monitors thallium concentration and other impurities, Leif interviewed a number of people while he was at Amcrys.

My interpretation is that Amcrys has a reasonably good control of the Tl consentration. My understanding is that they do not monitor it continuously while a boule is grown, but rather cut samples from the ready boule and measure the Tl concentration in those samples. According to Amcrys they measure the concentration both "chemically" and by spectrophotometric method. I assume the latter means they measure the light absorption in a well-defined sample for a specific wavelength. I do not know how they calibrate, and have no information of the chemical analysis. However, the precision in the numbers they present and the variation in them indicate an accurate method. They also have a calibrated chart over light yield and "brittleness" versus Tl concentration. In this chart there is a region where the light yield is max and mechanical properties good. If a boule falls in this region it is accepted.

When it comes to others tracers/impurities they seem to live in the dark. According to Leif no single person seemed to have thought about the possibility that there could be other impurities and do not test for anything other than Tl.