ACD TSR

Materials Engineering Branch Activities

Presented by Pilar Joy –July 14, 2004

PMT Latest Work

- Charles He has been disassembling the failed PMTs. This work has been difficult and he may or may not be able to tell the fracture origin for every tube. He is working on two NG tubes. He also two flight and five for the qual chassis failed PMTs to disasseble (9 total).
- Four different RTV 566 lots were used to pot the tubes into the housing. We only have material in the lab to make samples from two of the lots for materials characterization.
- Charles is testing a new method to measure Poisson's ratio, after the new method is verified he will be measuring the Poisson's ratio of the RTV.
- Mark McClendon is measuring the curing shrinkage of the RTV 566. It will be done by tomorrow.
- CTE measurements from all the RTV lots were done by Marje Sovinski. No major differences were found between the four lots used by the project.

Thermal cycle

- Dewey Dove thermal cycled the qualification chassis (rail OSA and OSB). Four PMT assemblies failed at -15ºC and one failed at -30ºC.

Strain Measurement

- Mike Viens has measured the thermally induced strain in two housing and two PMTs assemblies. There is agreement in the measurements between the two runs and the dummy housing strain. There is also agreement between the measured strain in the NG tube ZLO887 for both runs. However, in the second run measured, the strain in SN 5 (which belongs to the set of qualification PMT) does not agree with the ZL0887. The measurement in SN 5 suggest very little strain indicating very little tensile strain in the glass. Because there is such a difference between results of the two PMTs, the tests shall be performed again to confirm this trend.

ACD TSR Materials Engineering Branch Activities (**continued**)

PRT Investigation

- Diane Kolos has been working on a solution concerning the contamination of the leads on the commercial PRTs. Contamination was found in the platinum leads. The vendor agreed that they were having a problem with the lead cleanliness. The second set was brazed by the vendor and sample pieces from the leads were evaluated using the SEM. Contamination was also found in these pieces.
- Visual and X-ray exam was done of the PRT brazed joints before and after thermal shock. Some porosity was found in the lead but that should not be an issue.
- Two brazed PRTs were selected for cross-sectioning. The cross-sectioning is complete and one PRT has been examined using the SEM and it is acceptable. The other PRT will be examined today.
- Diane and Thom Perry had discussions with Leonard Lee at SLAC yesterday about the purchase of commercial PRTs. Leonard wondered why commercial grade PRTs were purchased. SLAC had directed ACD to purchase commercial PRTs. Diane strongly suggested they purchase flight grade parts to avoid the need to examine the brazed joints, lead cleanliness, etc. Leonard was going to check to see if they were soldering or brazing the PRTs, but Diane suggested the flight quality parts regardless. Also an alert for this PRTs is in the works.

Other Stuff

- Diane is also working the issue of grease on GLAST ACD connectors. She has contacted Powell Electronics about contamination on connectors. We are trying to find out what type of lubricant the vendor used. In a visual examination she also found metal debris present on threads and the gasket material should also be addressed.
- The Parylene coating process of the Qual chassis will start today in the Polymer *P*
- *rocessing* Lab.

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