

EIS Teleconference

NRL: GAD, CMB, JTM, KD

MSSL: MWT

Thursday, May 13, 1999

EIS-meet-sdt-tc1007

Minutes by MWT

Optical Design

Tetsuya's remarks (email dated 13/5/99) about the recently announced NRL/GSFC optical design (see the FTP site, <ftp://tcrb.nrl.navy.mil/pub/eis/EIS7T/>), were discussed. He had mentioned that spot size results of ray traces weren't the same as the NRL/GSFC plots. It may have been that he had assumed a large square grating, with the entire surface devoted to each wavelength range. This wasn't the case of ray-tracings done by Roger Thomas. Charlie world straightaway e-mail Tetsuya to describe the Configuration used in the NRL/GSFC design, hopefully the Japanese ray traces could be repeated, and the estimated spot sizes would converge. In the NRL/GSFC documents describing the optical design it may not have been stressed highly enough that round optics were being used throughout.

If the spot sizes were still regarded by the consortium as being too large, then they could be reduced in the present NRL/GSFC design by reducing the aperture. Obviously this would affect the throughput. Is there any Science that critically depends on having the throughput as currently stated in the baseline design?

We discussed the criticality of the ratio $R_s:R_t$ (the geometry of the toroid). CK stated that there are well-established techniques for insuring that this ratio is obtained during the manufacture of such gratings (refs: Huber? CDS?).

It was felt that despite some possible misunderstandings about the nature of the design, next week's meeting would be able to come to an agreement about its validity so that more detailed design of the other subsystems could proceed.

The status of the subsystem designs were discussed. The Birmingham group have been working on structural concepts, largely based on the figures layout.pdf/ps and drawing.pdf/ps. MW had discussed these with the Birmingham group, and also with NRL. The sketches from BU didn't quite correspond to the optical design. However the essential details of the latter were now fully understood. One possible concern of the present concept is the length of the telescope tube (containing the primary mirror). This needs to be quite stiff, and with a low amplification factor, in order to protect the drive mechanisms associated with the primary mirror from damage. They launch lock was seen as an undesirable option, principally because of the operational difficulties of testing it

and priming it for repeated use. Additionally, the launch lock mechanism constitutes a single point of failure. It was noted that with the correct optical geometry in the concept study that the length of this telescope tube would be reduced. Some analytical calculation of the dynamics of this tube will be needed to get a feel for this problem.

The issue of the baffle is still open. To our knowledge no further calculation of the likely hit rate from impacts had been performed, although so necessary description of the debris in the Solar-B orbit was available.

There seemed to be a slight a preference for locating the primary filter in a particular position along the telescope tube. This could be discussed next week. Now about while the filter itself will be an NRL supplied item, its associated clam shell and mechanism will come from Birmingham. The meeting agenda and system documents will be modified to reflect this. This a change in the work break-down, merely a clarification which should be reflected in the documentation. It was noted that this thermal design of the filter and clam shell assembly will be quite critical. For example, the SOHO-EIT instrument had had to have holes cut in thermal blanket to allow heat to be lost from its filter.

CK reported some developments of the mechanisms of the primary optics and the slit. More details next week.

MW reported what had been happening on camera developments at MSSL. The mechanical concept for the camera head had been developed in accordance with the NRL design proposal. This will be presented next week. Alec has been working on calculations of necessary board area to support the camera, and a plan for FPA development has been produced, the schedule will be shown next week.

CK reported some information (TI) about the use of rad-hard FireWire components, as well as some past experience of camera data interfaces.

Spacecraft interface data

We noted the requirement for interface information to be given to the systems side by the 21st May. (ref Hara-san reminders).

MW is editing documents which will contain all the information presently required by the system integrator, and eventually of all known interface properties of the instrument. The team should consider the issues referred to by HH, and forward any available information to both HH and MW.

Arrangement for future meetings

Engineering Design Meeting. NRL 18/19 May.

MW has now had feedback on the agenda from NRL and NAOJ. We will assume a nine o'clock start on Tuesday. The agenda will be modified as appropriate (to show actual times). Visitors need to report to building 72 to collect the badges and then proceed to

building 209. The foreign contingent (GMS aside) are staying at the same place in Old Town as before.