SOLAR-B EIS ☼ EUV Imaging Spectrometer	***SDT Minutes 10***	***Minutes 10***

Meeting 8 July, 99

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These are the minutes of the System Design Team Meeting, held at MSSL on 8 July 1999 (**SDT-10**)

Present: MWT (Chair), LKHM, AJM, RAG

Apologies for CJM

General Situation

No significant events other than those detailed elsewhere.

Systems Engineering

Information about the Solar-B command system had been received and distributed to Alec and Rob. It was noted that there were 'only' 32 commands stored in the DHU timeline. This led to a discussion of the power-up condition of EIS. Alec assuming for the present that some small amount (e.g. 1W) of power would be available at all times. This would be used to supply the circuits which would manage the transition to full power. There were a number of possible modes or states of the instrument.

ACTION: Alec to describe the baseline states and the permitted transitions, by 22 July. (A/SDT-10.1)

The criteria for mode definitions included: power consumption, safety (e.g. contamination), thermal stability, preservation of software state (variables), observing table protection/configuration.

Alec stressed the need to include test modes in the instrument, both in hardware and software. Rob advised some caution, as any modes, including test modes, would be required to be tested

themselves. There was a discussion about this tradeoff area which was not resolved, although it was agreed that it would be beneficial to have a mode of real-time control (or minimal latency) accompanied by maximum status information. There was a discussion of methods for preservation of state information, such as may be required be rapid resumption of operation following a power-off (intentional or otherwise).

Two methods were apparent:

Keep-alive RAM (requiring a small amount of spacecraft power) or use of EEROM. It was decided that the baseline ICU should incorporate both mechanisms. The details, such as how much data would constitute the "state" need to be worked out in the future.

MWT had circulated an updated system hierarchy EIS-sys-des-hierarc and this was discussed. Some of the ground-segment items need further elaboration (test facilities ? lifting gear). Or clarification (EGSE components). Note the EGSE acronyms are derived from a draft EGSE equipment list that will soon be circulated.

ACTION: MWT/SDT elaborate ground-segment elements 26 July (A/SDT-10.2)

ACTION: MWT correct EGSE acronyms 26 July (A/SDT-10.3)

ACTION: MWT circulate EGSE equipment list 19 July (A/SDT-10.4)

Subsystem Reports

No progress on shutter definition.

Chris McFee was continuing to study CCD shielding requirements, temperature effects. Analysis of change spreading was also in program. He had also been working on a specification for a CCD/camera development system, including PC and data acquisition cards.

On-Board Software

A more detailed software development schedule had now been worked out. Although not final, this had shown the need for more manpower on on-board software, and for the requirements at the PM delivery to be further defined. It was certain that the PM functionality will be a small subset of the FM, some key features will have to be omitted at PM - data compression and other advanced data manipulation being obvious candidates.

ICU

Duncan Self and Alec are developing an ICU architecture. A block diagram will be available soon. Since there are no known plans for a rad-hard implementation of the ADSP21060 processor the

baseline CPU is now the ADSP21020. The Virtuoso RTOS is also baselined. Some benchmarks need to be run on this processor family so that table loads can be scaled from after platforms.

ACTION: AJM consider benchmark strategy 22 July (A/SDT-10.5)

The ICU functional breakdown was discussed.

ACTION: AJM/DGS to elaborate that shown in EIS-sys-des-hierarc 22 July (A/SDT-10.6)

Since the ICU and far MHC must perform thermal control of the instrument, the thermal control approach must be known. The number of sensors heater points was particularly desired.

ACTION: SMM at BU to specify baseline number of nodes 29 July (A/SDT-10.7)

At present the number is thought to be >3 and <20.

Schedule

MWT was preparing to elaborate the schedule and will be seeking inputs from the team, particularly for the electronics development.

Review of existing actions

SDT Actions

A/SDT-9.3 HH/MWT communication - ongoing.

A/SDT-9.4 Update system hierarchy - complete.

A/SDT-9.6 CJM has 'defective' CCD images. He will show to LH, CPD - complete.

A/SDT-9.9 JLC still considering this.

A/SDT-9.11 LH had initiated compression group. Test data being synthesised (CDP). Action "complete" although expecting report during EM9907. Slot in agenda TBA.

A/SDT-9.12 HH had informed MWT that there were no more details of the J-ride ground segment, but that they would be made known to telescope teams in due course. Action complete.

No progress on other actions.

Consortium Level Actions

Refer to EIS-man-actions4

A-67 CJM Charge spreading in progress.

A-73 BU Legs protocol memorandum. Saad preparing to do this soon.

A-80 MSSL Shutter design details - no progress.

A-85 CJM Flat field lamp definition - in progress.

A-87 MSSL CCD radiator study - in progress.

A-92 MSSL Harness definition/nomenclature - completed.

A-95 MSSL Vac counter definition - completed.

A-96 BU A (TBC) value for the radiator α and ε has been supplied to the systemside, although this is still under study - completed.

A-97-100 CCD studies - ongoing.

A-104 AJM Data link white paper - urgently needed.

A-105 TR12 optical design.

NRL team does not consider this to offer great benefits and would ensure resources needed for other activities - action abandoned.

A-109 MSSL Component locations - no progress.

A-110 MSSL MHC position.

This will be somewhere near the ROE (in STR) - no further progress.

A-111 MSSL "Explanation" of CLM (FIL mechanical structure) is needed [by system side]. It is unclear what is needed here - seek further clarification from HH.

A-112 MSSL Temporal profile of power use.

Relates to A-123. A typical observation sequence should be assumed.

A-119 J-side orbital radiation study.

Some details seen (one of HH's presentations at BU). Not sure if this satisfies CJM's needs.

A-121 NRL Grating has one axis of motion - action abandoned.

A-122 MSSL Are MIR and SHT moving during obs? Need to develop typical observation sequences.

A-114,A-124 BU Optical properties (α, ε) of Door and MLI. Values (TBD) had been incorporated in the system thermal model - completed.

No, or unknown, progress on other actions.

Actions Arising at this Meeting

A/SDT-10.1 AJM Describe the baseline states and permitted transition. 22 July

A/SDT-10.2 MWT Elaborate list of ground-segment elements. 26 July

A/SDT-10.3 MWT Correct EGSE acronyms. 26 July

A/SDT-10.4 MWT Circulate EGSE equipment list.

A.SDT-10.5 AJM Consider CPU benchmark strategy. 22 July

A/SDT-10.6 AJM/DGS ICU functional breakdown. 22 July

A/SDT-10.7 SMM at BU Specify number of control points in baseline thermal design. 29 July

AOB EM9907 =

Engineering Meeting at MSSL - 3 days

27 - 29 July TBD

DONM Teleconference W/NRL 4 pm Friday, 9 July

Next SDT at MSSL, Library, 10 am Thursday, 15 July