Notes of informal FTT Technical Interchange Meeting
8 July 2010

Present: Eric Bakker (EJB), Martin Fisher (MF), Andres Olivares (AO), Nicolas Torres (NT), Chris Haniff (CAH)

Specific discussion items

Camera cable length

The Andor candidate camera cable length is restricted to 6m and, because of signal timing constraints, it cannot be extended. The current cable tray route specified in the UTE-FTT interface document MRO-ICD-EIE-0032d gives a length of 5.5m from the edge of the optical table to the bottom of Q5, the rack containing the FTT electronics.

The Andor camera is the main contender for the FTT-NAS and FLC systems and should not be excluded because of cable length.

We think the cable route needs to be checked and a shorter route identified or designed into the enclosure. The position of the camera on the optical table will depend on which layout option is chosen but the worst case position will be with the camera south of, but adjacent to, the M4 position on the east side of the table.

ACTION:

- MRO will examine the cable route in detail and estimate the length of cable between the worst case camera position on the optical table and the position of the FTT space in Q5.
- MRO will discuss with EIE whether an alternative cable route is feasible.

Thermal control

The EMCCD camera will be enclosed in an insulated box which maintains a suitable environment for the operation of the camera (the camera should not be operated below 0°C or the dew point). Heat must be extracted from the camera's peltier cooler and also from the camera enclosure. The total amount of heat to be extracted from the camera and its enclosure is between 50W and 100W, depending on the camera that will actually be used. The issue is where to exchange this heat.

We cannot directly use the telescope cooling referred to in section 5.1.1 of MRO-ICD-EIE-0032d because this can be as cold as -20°C. We could use a secondary cooling loop coupled to this circuit but the heat exchanger and its control system would then be exposed somewhere in the enclosure.

An alternative would be to exchange the heat with the coolant circuit within the electronics rack but we do not have details of that or whether we would be allowed access to it. A secondary cooling loop would be used to take heat from the camera and its enclosure and dump it into the cabinet coolant circuit through a controlled heat exchanger. Maxim heat that would be dumped is 100W. This would be part of the allowance of 250W that we have for the FTT electronics in the enclosure.

ACTION:

- MRO to provide details of both cooling loops, i.e. telescope and the cabinet circulations.
- MRO to find out if we can break into the coolant loop of the cabinet.

Dry air supply

We expect that a supply of dry air will be needed to protect the camera from condensation. The alternatives are to attempt to hermetically seal the camera enclosure (not really practical) or to incorporate a desiccant that will need to be exchanged routinely (not allowed under the current requirements).

We expect the camera environment to be maintained even if the camera is switched off as it must be ready for use. Therefore the dry air supply would be continuous with a flow rate of approximately 1litre/min.

ACTION:

- MRO to check with EIE if dry air could be supplied to the optical table.

Optical table interface

An interface at the south edge of the optical table is referred to in MRO-ICD-EIE-0032d (section 5.2). We wish to know if there are any details of this interface are available.

ACTION:

- MRO to provide information if it is available..

Rack space

The rack space available to the FTT system in cabinet Q5 is defined in MRO-ICD-EIE-0032d (section 4.1.1). Of 24U only 5U is allocated while 10U is allocated to UTM. We wish to know if the remaining 9U is allocated, reserved for future use or is spare. We currently think that 6U will be required for the FFT electronics Camera power supplies and heat exchanger/camera chiller.

ACTION:

- MRO to send information on rack space. (Note that we would like to know whether a request for some small additional rack space is likely to be met).

AOB

Shock loads on camera

AO asked if camera shock loads during relocation would be a problem. MF said it was more likely that this would be an issue for optics but would check.

ACTION:

- MF to provide feedback on what shock loads the camera can withstand.