

STS-107 MISSION MANAGEMENT TEAM (MMT) MINUTES

Friday January 24, 2003

The MMT was convened by the chairman, Ms. Linda Ham at 8:00 a.m. CST. All members were in attendance at JSC or via teleconference. The chairman indicated that the two main topics on the agenda were End of Mission down weight exceedence analysis and the proposed In-Flight Maintenance (IFM) procedures for the SPACEHAB water separation assembly

Mr. Phil Engelauf of the Mission Operations Directorate (MOD) reported that the Orbiter was performing well and that the crew was keeping up with the busy timeline. At the current usage rate, the non-propulsive cryogenic margin is trending towards 2 days, 16 hours by end of mission (EOM). The LiOH cue card has been revised to protect EOM + 4 (weather wave-off days).

The SPACEHAB Research Double Module (RDM) temperature was increasing at the rate of 1° F per day but now appears to have stabilized. The RDM temperature is currently ~ 79 ° F and the crew cabin temperature is ~ 76 ° F. The FRESH-2 Animal Enclosure Module (AEM) mufflers have been removed to alleviate internal facility temperature rises.

With the current RDM water control workarounds, there is no need to implement the Water Separator Assembly IFM that includes a 30-minute power-down of the HAB Fan Assembly for recovery of the Rotary Separator 1. There is on-going work to develop an IFM procedure to use the DC vacuum cleaner to clean up excessive water that may be under the RDM floor.

Mr. Don McCormack, Shuttle MER Manager, reported that the MER is looking at the capability to land with a 233,600-900 weight as projected by the flight control team. Ms. Pam Madera reported that current abort certification covers 1000 lb over the 233,000 lb. down-weight limit for flight control and stress. The thermal analysis looks at various body points including bond lines and the landing gear. The case for a 233,700 lb. EOM weight using the Thermal Structures Evaluation Program (TSEP) tool has determined that there are no thermal violations. There is no need to do a detailed thermal and stress analysis unless there are violations not covered within TSEP analysis. Additionally, the current Flight Rules documents the Thermal Protection System (TPS) bondline temperature limits that cover all de-orbit opportunities, include a weight change of up to 3,000 lb and a Center of Gravity (c.g.) shift of up to 3 inches. Mr. McCormack noted that a NSTS 07700 waiver is required to exceed the 233, 000 lb NEOM weight limit.

Mr. Richard Jones from the Flight Dynamics Group reported that STS-107 EOM weight is within the STS-87 and STS-83 experience that were over the down weight limit. STS-83, terminated early on FD5 had a 235,286 lb. landing weight. Thermal analysis was requested via a CHIT and all cross ranges were determined acceptable.

Ms. Vanessa Ellerbe, STS-107 Flight Manager, reported that the RDM temperature was within acceptable limits due to 4 adjustments of the Centralized Experiment Water Loop (CEWL) Water Metering Valve (WMV). The CEWL inlet temperature was currently at 61°F that supports Vapor Compression Distillation Flight Experiment (VCD FE) operations scheduled later today. CHIT STS0010 has been submitted to implement SPACEHAB IFM 8.2 that removes an orifice from a transfer tunnel air duct that provides Orbiter airflow to the RDM. Removing the orifice is projected to increase airflow from 53 to ~ 100 cubic feet/minute (cfm) and reduce the RDM temperature by 2-3 °F. The evaluation of this configuration is that there is no crew comfort issue with this change, but that the orifice may have to be replaced to redirect air to the Orbiter for entry. Since the RDM hatch is closed prior to entry this is not an issue.

An Experiment Ground Data Assembly (EGDA) software patch has been implemented to support a two EGDA configuration. This configuration isolates the prime EGDA and its PDI, PSP, Ku CH1, Ku CH3 interfaces, and payload EGSE from Ku CH 2 related crashes.

SPACEHAB science operations are proceeding well but a procedural error impacted the Microbial Physiological Flight Experiment (MPFE) science. The BIOPACK experiment experienced a thermal shutdown that may have been caused by a clogged filter. Two of three samples in the facility at the time were lost. The MSTRS payload continues to have command and telemetry issues. The Combustion-2 (CM-2) SOFBALL team reports fantastic results including a flame duration twice as long as seen on the STS-94/CM-1 experiment and the smallest flame ever produced, 0.5W compared with a birthday candle that generates 50W.

The FREESTAR MEIDEX experiment continues to make excellent Sprite observations and expects to have a dust plume observation opportunity on FD10.

Mr. Don Noah, representing Space Shuttle Systems Integration, reported that the Structures Working Group (SWG) has reviewed the down-weight exceedence and it is not an issue. Mr. Noah will investigate any SSME nozzle related concerns.

The chairman requested the processing of a CHIT to initiate the analysis required for the NEOM weight exceedence and closure by the next MMT meeting. Ms. Ellerbe, was directed to process an NSTS 07700 waiver for the weight exceedence. Ms. Ham closed the meeting and announced the next MMT meeting is scheduled for Monday, January 27, 2003 at 8:00 a.m. CST.

Original signed by: Frank Moreno

Mr. Frank Moreno

STS-107 Lead Payload Integration Manager

Original signed by: Linda Ham

Ms. Linda Ham

Chairman, Mission Management Team