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ECF Hardware Status

8/19/91

TREADMILL: The contract was signed in 8/91 with Whitmore Enterprises for the development and fabrication of a new Shuttle treadmill. Delivery date is 5/92. It is slated for potential manifest on STS-46 in 6/92. It will include:

- 1) A new 2 point harness system (it will not incorporate the current 4 point bungee restraint),
- 2) A wider, longer tread made of a composite to decrease noise during use,
- 3) Instrumentation with six load cells to determine ground reaction forces during ambulation, and
- 4) A motor drive capability; however, it will be passive initially (installation of a motor will occur later).

McDonnell Douglas ECF group expects the delivery of a prototype motor driven treadmill this week. This treadmill will be used to evaluate a vibration isolation system. This system will fly on the KC135 in 9/91.

MUSCULOSKELETAL OVERLOAD TRAINER: An initial version of an MOT prototype was flown on the KC135 8/15 and 8/16 to evaluate the mechanical feasibility of exercise procedures/configurations in zero gravity. The MOT team will meet on 8/19 to discuss issues, future direction, and schedules. The MOT will needs some mechanical modifications prior to electronic instrumentation and software development.

CYCLE ERGOMETER: A flight unit of the cycle ergometer is to be delivered by Innovision on 12/1/91. The Critical Design Review will occur in 9/91 and pre-acceptance tests are scheduled for mid-11/91. This device will fly as a DTO on STS-42 in 1/92. This system will be deployable and operable on the middeck and flight deck. Fabrication of a training unit will be completed by 10/1/91. The knowledge gained from the development of the cycle ergometer will be incorporated in the development of the dual cycle ergometer.

LOWER BODY NEGATIVE PRESSURE DEVICE: The current LBNP has flown on STS-32 and STS-43. It recently has incorporated a pressure controller module that eliminates the need for one crewmember to adjust and monitor pressure, thus dramatically reducing inflight

crew time. Future modifications will incorporate interface to an inflight data acquisition system for automatic data storage.

HEART RATE MONITOR: The HeartWatch heart rate monitor has been used successfully on several Shuttle flights in support of DSO 476 during inflight treadmill running. A chest strap with electrodes telemeters the heart rate to a watch worn on the subject's wrist and stores the data for later (postflight) downloading into a spreadsheet file on a PC.