Shuttle Biomedical Payloads

Assumption –
Goals - Separation –
Instrumentation - Operating Conditions -
S.L. problems –

Areas not explored –

Problems –
Pt loss +

Blood change

Vestibular

Neurological

Exercise + deconditioning –

Operational –

Payloads -

The most significant fact to be grasped and ~~lost~~ never sight of is that this is a new mission * ~~which~~ with radically different operating conditions. Among these conditions are:

1. Mission aborts are possible without the great penalties previously incurred -

2. Experts will be available to operate the gear - ~~It~~ The gear does not have to be reduced to the lowest common denominator i.e. it can be much less refined and more complex to operate - Hopefully the expert operating it will have some maintenance ability - *

* This expert should be able to record & interpet on boadd results thus minimizeng ground support & TM & data handling

Mission duration will be relatively short and turn arounds are possible - Reliability need not be taken to the previous extremes. Conversely safety may need to play an even more active role.

We have the advantage of greatly increased familiarity with space flight and its effects hence can afford to eliminate in many way previous precautionary ~~studies~~ equipment. Conversely we can ~~to~~ concentrate on identified problems.

~~Its~~ The missions should be no longer "canned" with years of design of complex special purpose

equipment. Rather we can use general purpose equipment to build complex systems as needed eg a good spirometer for pulmonary functions as minute volumes or in combination with other gear for ~~to go~~ metabolic studies rather than a metabolic gas analyzer as on the present mission -

Several not necessarily valid assumptions are made in the development of these plans &c including: Problems of space flight which would affect future missions should have first priority especially those problems documented on

2128
2138

Payloads 4

S.L.

An integrated effort will be mounted on problem areas rather than hopeful scientific shots in the dark

All of the missions except those designated medical will be operational with the minimum of routine monitoring - i.e. crew members will not be routinely ~~Holtered~~ on EKG or mass measurement or urine volumes or any of the other procedures and devices which would complicate the ~~acft~~ baseline vehicle. Hopefully medical knowlege of men in space will not require the (false) security ~~(false~~ blanket of EKG's and the like. Conversely there is no reason why crewmen cannot

participate in selected biomedical experiments that do not interfere with operational duties. On longer missions all flight personnel should be periodically assessed in a meaningful way as well as provided exercise and other conditioning devices.

The following are some of the major areas which should be studied - ~~Ofs always~~

Cardiovascular

Neurological