ROUGH DRAFT

URINE COLLECTION SYSTEM

In spite of the optimism of some about the Langley centrifuge, it has some serious design problems that will always give trouble in operation.

The two bag system is complex and will be complex in operation.

There is no question that one of these will be flown; however, the performance of either is not assured. In view of this, some form of back up which will allow salvage of the medical experiments should be developed.

Crucial to the experiments are daily volume measurements and sampling. There are several approaches to this. Basic to any approach is a method of 24 hour collection. A condom, one way valve & bag is one possibility. Better still would be a bag which does not require bladder pressure for filling. Volume measurements can be made in several ways including tracer-dilution, direct volume and mass measurements. ~~Tracer dilution, direct volume and mass measurements. Tracer dilution, if it works, has the disadvantage of no~~ inflight measurements. A simple centrifuge will allow mass measurements to the required accuracy. Such a centrifuge has been demonstrated but needs additional work. Direct visual volume measurements are also simple and probably the most desirable. Sampling can be accomplished by a small accessory bag as on the Fairchild Hiller scheme.

I would like to build and test working mackups of a couple of back up schemes. The first would be a simple bag and centrufugal mass measurement arrangement. The second would be slightly more complex with a 24 hour bag rotated during

collection period which allows a visual volumetric measurement.

This urine collection system is only one aspect of the larger problem of liquid handling in weightlessness. I should like to look at the other applications such as showers and wash basins and the like by continuing work on a separator-pump which still languishes in the shop.