

Memo - To - Kerwin, Young, Mattingly

Subj.: Food, Animals & Exercise (in space)

Over the past weeks and months a number of memos have been passed ^{through the office} on the above subjects ^{which} I have been attempting to follow, ~~these items~~ [&] ~~and have the following is a~~ ^{this} resume of ~~them~~ ^{their status} as of 25 Mar. At least 3 similar status reports have been prepared and scrapped due to ^{sudden} major changes in one or more areas.

Food - This ~~situation~~ ^{visualized} can best be ~~described~~ ^{depicted} by ~~described~~ ^{described} the situation facing us at our tasting for menu selection for SMD III. Exactly the same people served ~~us~~ ^{the} the first lot of Skylab food at the same table in the same office in the same building.

as the Smeat effort 4+ years ago. ~~Being~~
~~in plastic & Nothing has changed~~ With one
 exception nothing has changed and ~~so long~~
 as the same ~~peop~~ ^{resisted as before.} every effort to make a
 change is fought ~~vigorously and successfully.~~

^{P. For Shuttle}
~~Briefly~~ they are planning to ^{make} get a consensus
 on menus ~~selection~~ and package the same
 menus, 3 to a pack for everyone using a five
 day cycle with a nominal 3000 Kcal/day diet.
 A pantry containing some percentage (~30% at
 this time) of overage plus emergency food will
 allow ^{for} exchange of unwanted items on the menu.
 Food will be the usual rehydrateable, wet pack
 and a few ^{dried} 'natural items' but without frozen

items. Hot and cold water will be available for drinks & rehydrateables and a forced hot air oven available for hot items. The same water dispenser scheme is planned ^{except} with water injection ^{is} through a rubber dam[^] ^{on the pkg.} by a ~~still need~~ metal needle. They are letting a ^{& construction} contractor for more package studies, including how to rewrap or overwrap commercial chewing gum. (I'm serious) ~~This latter item best characterizes this entire effort~~ or rather they are serious about this). After packages have been designed or built they will be given to a second contractor to rewrap commercial foods & otherwise fill them. They will ~~probably~~ then be allowed to ripen until

The food will obviously be adequate to sustain life but at a great cost,
used.

I am prepared to give a ^{short (& unemotional)} briefing on the system
at ^a the pilots' meeting ~~one morning~~ which on
the food people have a much more elaborate
briefing. My suggestion would be an initial
short briefing, then discussion & follow up as
required with the food people. My position
is rather simplistic on this item. Adequate
off the shelf food & food technology is available
to support all shuttle missions utilizing this resource &
all over this country, and we should be trying to
improve the quality of ^{flight} food and its handling
rather than endless rewrapping contracts. If
The cost saving alone should be a driver.
I shall continue to try to push this effort

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toward if there is desire on the part of the office for better food. ~~So far it seems~~

So far it appears that ~~I am~~ my best effort may simply be trading the monkeys ^{bacon squares} for their fresh fruit in SMD III.

Animals - SMD III has brought this issue to a sharp head already and push may come to shove next week. Dietlein gave Bill a bit of history ~~a pass story~~ The main events to date are - In August Abbey signed out my memo pointing out that ^{heretofore} a ~~number of~~ problems arise when a large number of animals, especially with monkey are tightly enclosed c humans. Dietlein assigned the problem to Bush an engineer

who appointed a committee headed by a ~~one time~~
~~veterinarian~~ non practising veterinarian who
never called the committee. ~~After~~ After several months
he generated a document for protection of the
animals, ~~which some members~~ This was universally
demed unsatisfactory and Sam Beal added a
microbiologist to the writing efforts - Ames,
the people with the animals, were never contacted
and but a 2^o document was generated to cover
not only SMD but Shuttle. A ~~new~~ committee
was appointed eliminating all AHC people & those
of us who continued to disagree. After gentle
agitation a general conference was called and
~~at long last~~ some long sought actions were

recognition of human not animal safety as first priority,
 taken including appointment of ~~a~~ physician and
 veterinarian as co-chairman with support
 from consultants such as infectious disease
 and animal pathologists, ~~and a crew member,~~
 and Ames screwed up and put on a competent,
 (they had been without a veterinarian for their animal colony)
 honest ~~patho~~ veterinarian, who began to test
 animals - and the ~~fun~~ ^{problems} began. Ames had not
 had a vet overseeing their lab for some time but
 wanted ISC to accept their

There is a monkey herpes ^B virus which is
 endemic in monkeys who carry it without
 apparent illness (just as we carry herpes simplex)
 but under stress ~~they~~ this virus multiplies and is shed.
 It is not very infective to humans but

when ^{humans} they are infected it kills 75% and leaves the remaining 25% with paralysis, etc.

Nine of the 16 monkeys had positive serology for monkey B indicating they had been exposed to and were possibly carrying it. ^{The only controlled study} ~~One series of tests~~ ^{animals} 3 times at 2 wk. intervals ^{available} showed that by testing and eliminating all positive animals, 100% ~~pos~~ safety could be assured i.e. no animals were subsequently found to have the disease. and Testing 2 times gave approx. 90% assurance. ~~AR~~ ISC has proposed a ^{minimum} two week slip to test the animals and otherwise clean up the animal problems while ARC wants to go with 2 tests ^{and are presently going ahead on that basis,} ~~The fact that I~~ and ~~the~~ entire crew has had multiple

exposures to a potentially fatal disease (The odds
 are probably about the same as ^{the} flying a thousand
 hours but being done in by a NASA monkey
 is somehow less appealing). ~~through lack of~~
~~elementary precaution~~ ^{in spite of my warnings}
~~on 7/7/71~~ ^{part} does not put me in
 a frame of mind to accept further exposure.
 This is 1) a crew safety problem and 2) sets
 precedent for future procedure. In my best
 clinical and other judgement it is an unwarranted
 and unnecessary risk ^{consequence} for the ~~sake~~ of the
 to proceed ^{is} complete resolution of this problem.
~~very people who unnecessarily exposed us in~~
~~the first place.~~ As such my present inclination
 is ^{for the crew to} ~~to~~ have no further dealings with ~~the~~ any
 animals until reasonable safety procedures

have been established and implemented.

^PThis monkey ^{animal} B episode is not the primary problem. Rather the ~~whole~~ ^{animal} problem is complex and has not been adequately worked for the sim much less for the Shuttle. ~~It~~ It is obvious, or rather should be, that carrying a sizeable animal load is going to be ~~complex~~ difficult, far more difficult than flying equivalent human experiments. ~~With~~ The entire rationale for flying animals is generally indefensible but this is a political rather than logical process.

~~It is now~~ The problems increase almost as the geometrically as ~~squares~~ of the numbers increase and take a quantum step when non-human primates are added. An independent consultant in infectious

disease recommended against flying monkeys. In addition to the problems of infection there are handling problems & several safety considerations for one of these 'monkeys' can make shambles of a lab and its occupants. Servicing of these animals is going to require 3 hrs./day and including individually recording ~~urine~~ ^{loose} water and food and collecting (picking up ^{individual droppings}, pouring, measuring etc.) urine & feces of dozens of rats & monkeys.

~~After the~~ The 'zero G cages' we have, barely work in 1 G. ~~(if they are not tilted)~~ and Ames have not tested them with a full load of animals, since "they're so hard to refurbish" i.e. clean. After - There is the problem of disposal of dozens of

carcasses including the probability of one or more
 60 # monkeys for their ^{reliability} ~~tongue~~ after being
 plumbed up ~~has not been~~ would not qualify
 them for flight. Finally there is the problem of
 clear clean up of ^{the} handlers involving clothes,
 washing, antiseptics, etc. ^P While some of these
 problems ~~have been~~ are being worked (we are
 no longer using ^{wild Mexican} frogs collected by peasants and
 shipped directly to us ^{for} inspection or quarantine)
 most of them have not been satisfactorily worked.
 For example we are given off the shelf rats which have bitten
 even for SMO Ht. and I shall continue to
 the entire crew (ex. MS) with no thought of rabies or other prevention
 agitate for their resolution.

For the Shuttle era it is hoped
 that a real ^{or political or other} requirement for flying any animal will

be ^{required} ~~required~~. This ^{safety} problem has come to Johnson's attention and he will appoint a committee to draw up the rules. I would strongly urge that a crewman ~~be~~ be on this committee. ~~The committee for SMJTHH~~
~~so date they have vigorously resisted input from this source & repeatedly tried to remove or circumvent crew participation.~~

Exercise - Control of research and operations
 & in this area has been under completely control
~~except~~ ^{control} of Michel/Rammel, except for a
 S.L. when their efforts the voluntary nature of our
 program and for some inputs by us on S.L.
 Rammel has been trying for years to 'remedy'
 this and his most recent attempts were

a series of letters & memos to ~~Harber~~ (+ from) Washington seeking their ~~blessing~~ ^{to} ~~an~~ establishment ~~with~~ ~~of~~ controls over all exercise & exercise devices.

This effort was at least hindered by the ^{LSD} clinicians insisting that operational exercise ~~was~~ including testing was their province and by taking over the JPL Rummel's lab. There was a counter coup last 2 weeks ago when one of Rummel's men was given the lab - ~~C'est la guerre in LSD.~~

What is significant for us is that Washington is insisting on some kind of program in exercise. ~~There~~ ^{at} ~~was~~ a general meeting some weeks ago ~~when~~ it was agreed that: Anyone, including Rummel's who.

wants to do on board ^{exercise} research must go through the experiment cycle; that flight medicine will be responsible for clinical testing annually; that I would submit a guideline for voluntary exercise for ~~the~~ our office; and that we would jointly propose on board exercise and devices which would remain voluntary.

I am trying to put together a guideline for exercise which we can use to prove we have as it is. roughed out it will be distributed for comment, a program. In my opinion some sort of minimum standard far below what we ~~at~~ meet would be desirable for ~~with~~ the some of the applicants I've seen ~~with~~ are in such condition as to be flight ~~to~~ hazards.

~~As~~ As you know I am making a small unpowered true treadmill (man

(moving surface) which will allow jogging in flight. A ~~fundamental~~ Conversely Rummel is determined to ~~continue~~ have the bicycle as the only G.V. exercise.

My feelings ~~is~~ are that by working with the present flight medical clinicians we can continue to have a successful voluntary program & I shall pursue this course.

As for inflight hardware Rummel gets all the money, & my ^{\$}15K has been ~~spent on a boilerplate treadmill and the~~
Any help in this cause will be appreciated.