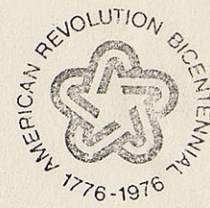




NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546



REPLY TO
ATTN OF: MMR

JUN 17 1975

David L. Winter, M.D.
NASA Director for Life Sciences
NASA Headquarters
Washington, DC 20546

Dear Dave:

Herewith are my comments on your proposed changes in the organization and implementation of our Life Sciences research program.

In recognition of the fact that there are multiple issues involved here, let me begin by attempting to first identify them and follow with a sorting out of pro's and con's and my personal views with respect to each. The issues, as I see them, are:

1. The single Center RTOP manager concept.
2. The reduction in numbers of RTOP's.
 - a. By reducing the numbers of RTOP areas.
 - b. By establishing a single RTOP per area vs. one for each Center.
3. The proposed new RTOP's, themselves.
4. Whether or not to change from our existing system altogether.

Before proceeding further, I should point out that I am forced to make some assumptions because your letter, concise as it was, left me with a few vagueries. Ergo, I am assuming:

1. That the impetus behind all of this is some rather pointed criticism from on high with either implied or overt threat to further reduce funds, staffing or both.

2. That the single RTOP managers will be Center personnel in all or almost all cases.
3. That the RTOP manager will be accountable for all activities within the realm of that research effort, at or through whatever Center that research is being conducted (i.e., that you do not mean that the research of one RTOP will be carried out at only one Center); that, in essence, you are talking about the old "lead Center" concept.
4. The first page of your enclosure has no title. I am therefore assuming that these are also proposed RTOP's, their organization into two areas implying an essentially problem oriented functional structure which would be acceptable to management.
5. With reference to this same page, I assume that you mean to allot dollars for Shuttle LSS (Life Support Systems) as well as for Spacelab advanced life support systems, and Spacelab ECS, LSS. I also assume that bioinstrumentation is included under "Spacelab Remote Health Care and Technology". (If bioinstrumentation research is not provided for, I can only conclude that its omission is unintentional. It is obviously one of our strongest requirements and potential contributions.)

With respect to each of the four issues I refer to above, I will attempt to state them as clearly and concisely as possible by putting them in outline form.

I. Single Center RTOP Management Concept

A. Pro's

1. Hopefully, welds similar activities at various Centers into single integrated NASA effort for each RTOP area.
2. Places scientific and technical responsibility at level of greatest technical competence.
3. Eases Headquarter's staffing burden by reducing requirements for professional competence in detailed areas.

4. Aids Centers in understanding and furthering "global" NASA view and responsibility.

B. Con's

1. Relinquishes Headquarter's responsibility for developing single integrated NASA research program to Centers.
2. Introduces likelihood of unequal research support in favor of home Center of RTOP manager. In the real world, inter-Center competitive attitudes have been a severe and extremely long standing problem. Although understandable, and probably because of it, this problem persists unabated despite all attempts at resolving it.
3. Center management may be reluctant to fully accept program management by representatives of another Center.
4. Role of Headquarters in effectively supervising RTOP managers is critical. Methods and procedures are not defined and the effectiveness of any proposed mechanisms would have to be considered questionable in view of the peripheral release of such a large segment of Headquarter's function and authority.

C. Personal Views

The establishment of true Headquarters function and authority was finally accomplished in 1970 after many long and difficult years. The decentralization of this role, even in part, must not be undertaken without sufficiently strong motivation. Assuming that adequate reasons do exist, such as our severe staffing problems in Headquarters, then the RTOP managers and their Center management supervisory layers must be made to understand that these people are really functioning as extensions of Headquarters Life Sciences, an awkward position for them, to be sure, but nonetheless essential to the entire concept if the "con's" listed above are to be mitigated.

II. Reduction in Numbers of RTOP's

A. Pro's

1. By reducing the number of RTOP areas
 - a. Decreases bookkeeping (Centers and Headquarters), thereby decreasing burden on personnel and perhaps decreasing numbers of personnel required.
 - b. Decreases conflicts between RTOP organization and Center management organization.
 - c. Decreases redundancies and "hiding places" for split tasks and similar or duplicate tasks.
 - d. Possibly permits fuller range of problem oriented tasks within a single RTOP with less overlap and perhaps greater understandability to top management.
 - e. Assigns larger dollar amounts to each RTOP with resultant greater flexibility and range of action for each RTOP manager.
2. By establishing a single RTOP for each area
 - a. Consistent with single RTOP manager concept.
 - b. Same as a. and d. above.

B. Con's

1. The reduction of numbers of RTOP areas
 - a. Present RTOP system took years for all concerned to become accustomed to and work effectively with. Readaptation to a new system will require time for effective operation to be established. This learning period, mostly but not exclusively on the part of the new RTOP managers, will very likely cause inefficiencies which may well involve losses of time and money which we can ill afford.
 - b. Fewer RTOP's and a new system may result in compromised accountability for FY 1975 research expenditures.
 - c. There are more problems than RTOP's. Therefore, if confined strictly to the research pertinent to these RTOP's, the remainder would be left uncovered.

- d. Increases vulnerability of each if top management should disagree with any one.
- e. Several important areas have been omitted (see comments on RTOP's, themselves, -- III, below).

2. By establishing single RTOP's per area

- a. Inconsistent with Center management procedures and would therefore require the full cooperation of Center top management as a management exception.

C. Personal Views

I believe that some reduction and change in RTOP's is, indeed, indicated, but on a far less drastic scale than that proposed. I feel that the continuum of operation can be maintained, accountability preserved, and pitfalls avoided by making discreet changes where indicated. This can be done by combining some RTOP's (i.e., the two in Behavior and the two in Biology, preserving Radiobiology) and renaming several or even all of the others, at least in Biomedical Research, to reflect problem areas. In fact, we went through this exercise several years ago for a presentation to top management. At the same time, we can retain the same RTOP numbers to preserve continuity (and also avoid the image of instability and the implication that all that was done in the past was either misguided or inconsequential or both).

With respect to the proposed single RTOP per RTOP area, I have no problem with this, provided that Center management will go along with it to the extent that they will cooperate fully and unstintingly. Anything else can be anticipated to cause complications. This idea does conform with the Center RTOP manager concept and my comments on that are in the preceeding section.

III. Proposed New RTOP's, Themselves

A. Comments on RTOP's and titles as listed

1. Biomedical Research Area

- a. "Cardiovascular Deconditioning". This looks to be the -12 area restated. I assume that the development of cardiovascular countermeasures is included here. I strongly feel that the highlighting of countermeasures research was the closest thing we had to the statement of a meaningful problem area, and I do believe that we would be making a misstep by omitting it (or its mention in one of these RTOP's). Otherwise, I have no argument with this RTOP.
- b. "Medical Selection Criteria". This is good and important, but it should be combined with "Crew Health and Safety, Selection" to comprise a retitled -45 RTOP area.
- c. "Space Motion Sickness". This is fine for the -11 RTOP, but I would add, "and associated problems", or something of that sort to allow inclusion of other neurophysiological research (sleep, other special senses, integrated CNS function \bar{r} e balance and coordination, etc.).
- d. "Bone/Muscle Alterations". This would be a satisfactory retitling of the -14 area, but I do not see anything pertaining to degradation of post-flight exercise responses included anywhere. A reasonable combined title might be something like, "Bone, Muscle, and Exercise Response Alterations". This should be a satisfactory "next best thing" to the new Exercise Physiology RTOP which we promised the Centers last year.
- e. "Blood Changes". No problem here for a -15 RTOP except that it should be combined with the next one, "Early Detection of Disease", since the same people are involved at JSC anyway. At ARC it shouldn't matter since this work is now being carried out under the Microbiology RTOP, which you propose to exclude.
- f. "Early Detection of Disease". This should be combined with "Blood Changes", above, or

possibly with the "Medical Selection, Crew Health and Safety" (b., above) RTOP, a retitled -45.

- g. "Electrolyte and Hormone Changes". I have no problem with this as a new title for -16.
- h. "Radiation Effects". This is fine as a new title for -63.
- i. "Crew Health, Safety/Selection". This should be combined with "b.", above and possible "f." above, as -45.
- j. "Behavior and Performance". This combines the present -51 and -52 RTOP's, an action I agree should be taken with retention of the -51 RTOP number.
- k. "Space Biology". As mentioned earlier, I also agree with this action, combining the present -61 and -62 RTOP's to form a single -61.
- l. "Physical Design Requirements". Here I am lost. I simply do not know what this title is meant to convey or what is supposed to be included in it.
- m. "Supporting Biomedical Research". This looks like a catch-all to include all that was omitted from the above and perhaps more. Possibly it is a home for Headquarters and Center Directors' funds, or Headquarters supporting tasks. I can only guess, but whatever it is, it looks it and it shouldn't, i.e., it is extremely vulnerable.

2. Areas other than Biomedical Research

My comments here will be in prose, since I am not certain enough of my interpretation of your meaning to be very succinct. I do have two major concerns, however. First, I am at least unable to understand and at most strongly opposed to the omission of bioinstrumentation from this list. As I said earlier, this should be one of our strongest contributors

to the world because of the uniqueness of our needs and capabilities in this area.

Secondly, I don't understand the reason for the redundancies of the life support system efforts in the face of our apparent need to reduce RTOP's. I believe I can see why you are highlighting Orbiter and Spacelab (to show operational support, I assume), but do not agree that we should show that we are spending money, or worse, actually spend it, just to show support for a flight program when in fact little or no research is required. Why not just indicate that we have completed supporting research for Shuttle LSS, etc., and are now using similar funds for Spacelab and Shuttle experiments?

With respect to the completeness of coverage of these areas, except for the absence of the bioinstrumentation effort, I would have to see or hear Stan and Dan's comments in order to help me arrive at relevant conclusions.

C. Personal Views

In addition to the above comments on each discrete RTOP listed, I should add a word or two on the areas not covered. Looking at your list I see no mention of, nor do I see a real place for: Respiratory Function, Microbiology, Toxicology, Environmental Factors Effects (chamber work, centrifuge work, bed-rest studies, etc.), Experiment Definition, or Cross Correlation of Data. I have already mentioned Countermeasures and Exercise Physiology, above. While I feel that Microbiology can now become exclusively operational or almost so, and that except for the early detection of disease efforts microbiological research can now be minimized or phased out, my thoughts are quite the contrary for the other areas. I don't think it is necessary to discuss the importance of each one here with you, of all people, but I would like to point out that there appears to be no place for them except perhaps in "Supporting Biomedical Research", and that's such a weak sister that I would predict that we would be spending 9/10ths of all of our time fighting to defend it. This needs to

be worked out and most preferably, if not essentially, by direct discussion lest we communicate ad nauseam by written tome (like this one).

IV. Necessity for Change from Existing System (Summary)

A. Purposes and Objectives (Desired Pro's)

1. To respond to current pressures coming through or from top management
 - financial constraints,
 - personnel constraints, and
 - possible criticisms
2. To provide a tighter, better directed, and improved program designed to meet current NASA requirements.

B. Intended Pro's of Plan

1. Responds to personnel constraints by utilizing existing personnel more efficiently (Center RTOP managers) and reducing future expansion of personnel requirements by simplifying program (reducing reporting and accounting requirements).
2. Tightens program, itself, its relevance, and thereby also its saleability by emphasizing problem orientation.
3. Reduces program costs by adhering strongly to problem orientation, implying at least, decreasing support of less directly relevant tasks.
4. By utilizing the appointment of Center RTOP managers as a management device, strives to improve the integration of the NASA Life Sciences Research Program beyond what has already been achieved.

C. Con's

1. Unless the Center RTOP managers are, themselves, very carefully managed by Headquarters by means

as yet undefined, Headquarters Life Sciences Office risks the decentralization of its own proper and hard won integrative function.

2. Center RTOP manager system, ineffectively managed, introduces the risk of failure of program integration, fiscal efficiency, and research planning effectiveness, and further risks bringing about imbalances in research implementation in favor of home Centers.
3. Possibility of establishing an effective management system in conflict with existing Center management procedures and natural Center allegiances is questionable, and critical to the entire plan.
4. Weakening of Headquarters Life Sciences Office by diminished requirement for, and thereby, soon to be diminished scientific and technical competence.

In summary, Dave, I have attempted to analyze the question as objectively as possible. As you can see I have many reservations and some specific objections, these latter being almost entirely confined to the discussion of specific RTOP's. Although my reservations are very real and quite strong, they rest to a great extent on the "why's" and, even more importantly, the specific "how's" of the proposed plan, and for the most part these are not clear in your letter. Because the motivating factors can only be surmised, any attempt I might make to help with the kind of gain vs. risks judgements so important here would be as useless as the proverbial mammaries on a grand piano.

Specifically, I am most concerned about the possible, perhaps even probable, relinquishment of Headquarters' proper function and strength in carrying out its role as the integrating and unifying source of the single NASA program of which you speak. I say this after having lived for so many years in an impossible situation in which Headquarters Space Medicine had virtually no real authority, having unwittingly abdicated its function in 1964 when poor old George Knauf outfoxed himself -- and us. It was Jim Humphreys who walked into this situation and who, after a great deal of self torture, by begging, borrowing and stealing, battling, pleading and out shouting, finally managed to pull it all together before he left. In fact, I firmly believe that you would do well to contact him and ask him to review this plan. I believe his comments would be very valuable.

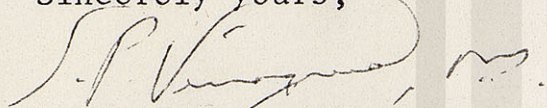
The question of the management of the Center RTOP managers by you is the "how" of paramount importance here. Not knowing that, my own position would have to be an adversary one until the detailed plan proved to me otherwise.

As to the specific RTOP's proposed, my specific comments are written a few thousand pages back (in case you read this end first). In substance, in order to avoid the pitfalls outlined I favor retitling and combining existing RTOP's (to form one Biology and one Behavioral RTOP, and probably also combining the current -25 with the -35 RTOP) and retaining current RTOP numbers except, of course, for those missing because of the combining process, i.e., -25, -52, and -62. I will be happy to submit descriptive paragraphs as soon as the RTOP changes are finalized. However, I left a lot of previously written material with Thora, some left over from earlier problem oriented exercises, which would be appropriate for scavenging and reconstituting.

I appreciate the opportunity to comment on this plan, and I apologize for the length of this volume (nee letter). To me, however, the question is not a simple one, quite obviously.

Stay well.

Sincerely yours,



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Director, Biomedical Research
NASA Office of Life Sciences

