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TO: Dr. Charles W. Edington, Associate
Director of Research and Development Programs
The Atomic Energy Commission

FROM: Hardin B. Jones, Assistant Director
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In charge of research and program review

Second installment of communication to the Atomic Energy Commission (the first was on July 3) in reply to the tentative draft of the Reviewers' Report on Donner Laboratory

The extent of negative criticism in the report is unjustified and extremely and unfairly hurtful. I request that you consider amending all the sections concerned with regard to the following points of major negative criticism:

1. "The laboratory has tended to become isolated from the academic life of the University, has a low proportion of faculty appointments, and has minimal association with the School of Medicine."

   Fourteen members of Donner Laboratory are involved in regularly scheduled teaching in three departments of the University. Six members of the staff are tenured professors, and three are emeritus but still active at the University and within the Laboratory. There were other members of the Laboratory who competently taught courses gratis in the Division of Medical Physics, but these were cancelled a year ago by Dr. Mortimer when he was made Chairman of the Division of Medical Physics. We expect to have additional associations between the Laboratory and teaching departments throughout the University. No such comment was made in the Chemical Biodynamics Laboratory review, although they have fewer faculty per capita.

   With regard to the relationships with the medical schools, there have always been episodes of real collaboration and joint appointments. While these are not evident at first inspection of the Laboratory's program, they currently include cooperative activities with the University of California San Francisco campus, the Medical School of the University of Arizona, Stanford Medical School. There are also significant cooperative medical programs with major medical centers:* The Alameda County Highland Hospital, the Kaiser Foundation Hospitals and Health Plan, Letterman Hospital (U.S. Army, San Francisco), and the U.S.

* This list is by no means complete; the listing of cooperative activities involving radiation studies, dosimetry, radiation exposures, hormone assays, lipid analyses, electron microscopy, trace element analysis, and more involve hundreds of examples.

Public Health Hospital in San Francisco. Information along this line was not requested of the Donner Laboratory administration at the time of the Review so that it is fair to presume that the observation was not based upon serious inquiry.

In the experimental radiation therapeutical studies now planned, there will probably be clinical working relationships with the local medical schools and with our regional clinical centers as has been the case with our previous large-scale clinical investigations. Contractual arrangements are not needed at this time, and it is unwarranted in the draft report to assume a deficiency of such planning. In actual fact, there has been collaboration with one of the country's leading radiotherapists (Dr. Max Boone, University of Arizona Medical School) with regard to all stages of planning for the clinical studies to be associated with the HiLac. Furthermore, the reviewers should have given the Laboratory credit for having been able to manage clinical collaborations in the past and the presence of a well run metabolic pavilion for clinical studies. As for experience, the number of patients handled in the series of pituitary irradiation is 669 (breast cancer, 183; diabetes mellitus, 169; acromegaly, 224; Cushing's disease, 29; chromophobe adenomas, 31; Nelson's disease, 10, brain tumors, 13; miscellaneous, 10). Other clinical testings, diagnostic work, and treatments involve outpatients totalling many thousand.

2. "The senior staff have not cultivated a sufficiently large group of contending young scientists."

The statement is partially true at face value, but there is another side to the matter that should have been obvious to the reviewers. Predoctoral and postdoctoral funds have become scarce throughout the country. Also, research funds have been cut. There has not been opportunity for employment of younger scientists on the scale we would have liked. One relief for this situation has been the training grant in biophysics which I acquired in 1960, and which has steadily supported approximately 15 graduate students each year. It is also interesting that we verified by count that the number of graduate students in the Laboratory is 40 this year, and the number and quality are about the same as any time during the past two decades.

We have been able to keep our best student in recent years, Dr. Budinger, and the reviewers concur on the wisdom of our choice. The ability of the Laboratory to have and retain students and young scientist, such as we have is due to the fact that several members of the staff have applied for and received grants from other agencies. While it is true that the Review was conducted within the AEC program, negative credit seems to have been given for outside grants, for there is a coincidence between the negative rating and that person's acquisition of non-AEC grants, and positive comments on the absence of non-AEC funds. Since the AEC offices have urged us to get outside funds and the funds in most instances are in the AEC interest and an independent test of quality, the curious inversion is an indication of the superficial and limited aspect of the Review.

5. "A process of maturation has taken place in the laboratory characterized by less competitive selection and less infusion of outside talent than is desirable."

If this is a criticism against the Donner Laboratory, then it must apply generally in laboratories of science throughout the country, for all laboratories tended to start in the post WW-II period with young scientists who have now aged. In our situation we have approximately an even distribution of permanent staff by age from 35 to 60, and, in younger ages, there are at least twice as many promising persons as are likely to be kept unless the Laboratory expands. The next wave of retirement (Jones, Born, and Dobson) will not occur for six years. Thus, it is not true that we have a serious problem of maturation. We will, however, achieve during the next decade a very healthy situation of balance of staff between new input and retirement and with a group of emeriti whose distinction that may help steady the Laboratory. This criticism by the reviewers is only true in comparison to events in the Laboratory in 1944 when most of us were under 30, and all were under 40. It was a juvenility not likely to be seen again.

Outside talent has always come into the Laboratory. We have been sought by scientists from all the countries that support science; and we have also sought needed talent. This influx of diversification has always been enough to offset the local origin of most of our senior staff. Recently, the late Aharon Katchalsky of Israel was a regular visiting member of the Laboratory, as is William Meyers of Ohio State University, Professor Strajman of Argentina, Professor Max Boone of University of Arizona and Henry Borsook of Cal. Tech. In the past 10 years there have been 18 persons of scientific distinction from other institutions, largely from abroad, working in the Laboratory for various periods of time. Obversely, our own staff members have spent sabbatical leaves in other scientific laboratories in this country and abroad. Again, the answers would have been available to the reviewers had they inquired, and the absence of inquiry shows that the matter was not given serious attention.

I believe the quality of research and attainment has increased with the maturity of the staff. The fact that important discoveries were made when the staff was younger is simply happenstance, for the work of recent times reflects sophistication in the choice of problems and the sparks of originality applied in the reduction of them.

The entire draft report has overtones that the Laboratory and its members did great work in the past, but now the outlook is mediocre. During my entire 30 years of responsibility for the Laboratory, I have known this to be said by sources of unfriendly criticism. As far back as 1950 the common version was that radioactive isotopes were now generally available so that Donner Laboratory was now doing mediocre or common place work. The current variation of this theme is that nuclear medicine's techniques are common place - Donner is obsolete. These criticisms have always been proven to be totally unjustified.

4. "Interaction and communication among groups in the Laboratory appear to the reviewers to be remarkably low."

Again, this was not a question directed to the administration. The fact is that there are many examples of collaboration by members of the Laboratory. In answering this statement, I listed 18 collaborations between senior staff members of a major nature. The comment only rings of truth in regard to a few persons isolated by the nature of their work.

The Laboratory has always been known as a place for cross-fertilization and interaction between scientists and this characterizes the Laboratory today. The reviewers are mistaken.

5. The reviewers repeatedly commented on the inability of the staff "to define the course of their investigations, where they plan to concentrate effort and resources, what hypothesis was to be tested, how they set objectives and assessed progress, and how their work related to goals of the Laboratory."

These are reasonable questions to ask, but as anyone knows who has been so tested, the answers require skill and experience. Special skill and not competence has been tested. In applying this test the reviewers got answers that appeared to be discrediting. In the cited response of Dr. Van Dyke: "he threw the reviewers into disarray when he said he didn't know what he would work on next and that he considered the cardiography project completed." His statement is true and utterly frank, and it is a response I, too, have gotten many times from Van Dyke over the years of our association. He and most of our scientists are exceedingly cautious about making claim to future research. It is a characteristic of the staff. On the other hand, in the instances where these questions were handled deftly, no credit was shown. The real test of each person is what the research record shows.

The comment by the peer reviewers has partial validity in one area: there has been much recent expansion of nuclear medical research throughout the world, and this makes the selection of untrampled problems difficult. We can never be certain, from our work alone, where the next step should be. We have given the matter much attention in our research planning, and I believe that we have probably avoided redundancy in the medical research program. The still unique radiation detection instrument development of the Laboratory by Dr. Anger gives us special advantages. But an equally important resource is the senior staff. I am confident that we will keep the nuclear medical research original and in the forefront of medical science.

6. "An area of dissatisfaction with respect to allocation of resources within the Laboratory was reported by reviewers, etc."

The Laboratory budgets are largely determined by the #189 forms, and in almost all instances have continuity from year to year. The allocation of common resource funds for equipment and the like is done by a committee of senior members of the Laboratory, appointed with great care, and all of them are

available to all staff members. The reviewers cited certain instances of complaints. There are a few persons who do make such self-oriented complaints generally, but I believe that the reviewers' comment was unjustified and not a proper matter for consideration by the peer review. Anxieties do exist with the Laboratory originating from the fact that for several years we have had reduction in funds. During the past year the reduction has necessitated the reduction in staff, and the possibility for the trend continuing is unsettling.

My replies about the draft report comments on individual persons is, at this time, limited to those who I think have been unfairly treated.

1. Dr. McRae spent several years in the Laboratory in the late 1950's when he was a medical fellow supported by the Australian Government. He is a superb physician and teacher well-qualified to be a Professor of Medicine as he was in Australia. We persuaded him to come with us permanently because we need his special talents in our experimental and nuclear medical programs. His work is of the highest clinical and technical quality. Medical students and young physicians constantly attest that they have learned from Dr. McRae some of the greatest lessons in their medical training. His relationship to the medical research program is to see that the clinical trials are carried out properly. He has another very important skill: he has an exceptional temperament, and is the source of cohesion and cooperation within the nuclear medical team. He is one of our key people.

2. Dr. Thornton Sargent's evaluation was not in the correct vein. He is not engaged as an independent scientist although he does excellent independent technical work. He has a service role, and he performs these duties accurately, dependably, and with the admiration of all of us. There are possibilities for the extension of work with the whole body counter and related instruments, but these plans are secondary to the research of other members of the laboratory staff.

3. Dr. Donald Van Dyke is a productive, highly original person. There is little chance that he will become unproductive either in hematology or experimental nuclear medicine.

4. Dr. Howard Parker does lag behind his personally directed research, but the reviewers should be aware of the extent in which he volunteers to help with other physiological and nuclear medical research programs in the Laboratory in efforts that are important but do not easily show to his credit. He does not lack competence, training, ability, or experience.

5. Dr. Thomas Hayes has, as the reviewers "acknowledged with credit for outstanding achievement", been criticized as "moving slowly and unimaginatively on a methodical plateau, etc." This is grossly unfair. He has for years been the member of the staff most highly praised for his work for its imaginative and realistic qualities applied to many biological problems.

The fact that his technical developments have wide and useful applications does not make him a mere technician. I evaluate him as

follows: His past achievements, especially in scanning electron microscopy, are of unchallenged merit including a gold medal award from the American Medical Association. What has been neglected by the reviewers is his frequent consistent contributions to the understanding of electron micrographs of all kinds in biological studies. It is slow going, but he makes progress. He brings to electron microscopy the talent of a physical scientist who also has three decades of experience in biology and the science of electron optics. His work to expand the technical interpretation of the electron micrograph is paced with active and vital collaboration in many campus institutions and Donner Laboratory projects. See attached statement by Dr. Hayes.

6. Dr. Okerlund's program is really shared by Dr. Lawrence and Dr. Tobias; he is not a fully independent investigator. He is a physicist working for his Ph.D. I believe that the reviewer's finding would be cast in a favorable light with allowance for the fact that his work, recently assigned, is still highly supervised by the senior staff.

7. My colleagues, especially Dr. Tobias, Dr. Lawrence, and I have a high regard for Dr. Stanley Curtis. I note that the reviewers "were in agreement that his program has merit and they were enthusiastic about his work in dosimetry and beam quality analysis." The latter is his principle work, and we have confidence that he will master the biological techniques that at present are, for him, a new venture. We have had good success over the years in encouraging physical scientists to become competent biologists.

8. The comments on Dr. Burki reflect his personality. In fairness to Dr. Burki, it must be pointed out that his work is of reasonable quality and quantity and he has outside grant support.

9. Dr. Bearden deserved much higher rating by the reviewers. His work identifying early process in photosynthesis is important, and the reviewers note that it is a significant achievement. In this work he has been in active collaboration with the Departments of Cell Physiology (Arnon) and Biochemistry. I know that they have an appreciation for his achievements. I presume that the reviewers knew of his currently planned work to investigate the direct capture of electrical energy from photosynthesis. Our assessment of the potential of the proposal gave it a high rating and one, we also note, very much in the interest of the AEC's program in energy development. He is not isolated from the Laboratory, and he represents an area of expertise needed for the balance of the scientific talent. Although the reviewers classified his work as biochemical, we consider it biophysical; he has guided the graduate work of six students in biophysics. The comment that he showed impatience with the Laboratory administration is not relevant to the peer review, and I contend that the remark should have been excluded. Dr. Bearden has only been at Donner for a few years, and he has been treated generously by our administration in establishing him in the laboratory and in providing for his needs.

10. The comments on Hardin Jones, page 8, item 1, contain untrue, unfair, slanderous, and libelous statements. The matter is unprecedented. I cannot link any statement to the events of the reviews involving Jones, Grendon, and White. Nick Carter has told me by telephone that he has struck the gratuitous remarks from the draft report. But the draft report has been widely circulated, and the most hurtful part of it used by

Dr. Sessler, though deleting my name, in his meeting on July 16, 1974, with the Donner Laboratory staff about the draft report.

11. The extent of high praise given Dr. Frank Lindgren is certainly sufficient to mask the bit of faint praise. His classic contributions to scientific methodology in ultracentrifugation and lipid research beginning with an important contribution to ultracentrifugation theory deserve high evaluation. His work influences clinical research determinations of blood lipids throughout the world.

12. Dr. Freeman has outstanding expertise in infrared spectroscopy. It has turned out that these techniques, though always useful to several of the Laboratory projects are now from today's main areas of research. We have enough gain to continue supporting his work. At the time of the review Dr. Freeman was affected by a malignancy that is both high debilitating physically and usually incurable. It is unthinkable to discontinue his work. With eye to the beauty of science, his work is jewel-like.

13. Dr. Fawaz submits a statement attached which is a refutation of the reviewers negative comments about his work. I concur with him and believe the reviewers were in serious error.

Contrast between the draft reports on Donner and Chemical Biodynamics Laboratories is germane to criticism of the systematic errors in the draft report. Both laboratories surely have distinguished records of accomplishments as past histories verify, and as the draft report on Donner Laboratory itself states. Both have approximately the same staffs and leaders now as in the past, and about the same continuity of programs all sufficiently diversified to stabilize against changing patterns in research in the separate areas of medical and chemical science.

In all sections of the CBL draft the comments are lauditory; in almost all sections of the DL draft the comments are contentious to negative in tone and implication.. It is not possible to imagine that one has become so good and the other so mediocre in a short period of time. It is fair and necessary to inquire as to the origin and nature of the marked systematic negative bias that has affected the draft report, for it seems to be larger than merely the unrest following the appointment of Dr. Sessler.

The peer review system is supposed to be directed to the quality and the worth of the research programs. In the portions of the draft report not involved with negative criticism the quality of the work of Donner Laboratory does show through. I certainly believe that the majority of the comments and reviewer activities much have been above reproach, and I so stated in my first comments of July 3.

The draft report, page 1, item 1, states: "Although the principal programs of the Laboratory are conducted by scientists of high intellectual stature and productivity, a disturbing proportion of mediocre work was recognized." Since the contention for mediocrity has been shown to be based upon error, it is reasonable to reduce the comment to: "The principal programs of the Laboratory are conducted by scientists of high intellectual stature and productivity." Indeed, this very phrase was stated in my presence by several reviewers. This is the prime asset of the Donner Laboratory, and the value of it to the AEC.

I conclude by [illegible] the [illegible] of the Laboratory for the AEC, especially in the applied areas of [illegible]:

1. The [illegible] of problems of diagnosis, physiological function, and therapy using radiation and radioactivity is distinguished and likely to be productive in the next decade. The Atomic Energy Commission can take pride in the creation of a new, widely used medical speciality, nuclear medicine.

2. There is a realistic plan to engage in radiation particle therapy and diagnostic studies of several unique new types involving the Bevalac.

3. In the area of environmental protection and radiation safety, there is the possibility of continued distinguished work distinctly in the interest of the AEC and applying generally to the problems of modern technology; carcinogenesis, aging, prevention of industrial, environmental, and degenerative diseases, and enlargement of concepts of safety in energy development.

4. There is a program in basic biology ranging from biophysics to biomathematics and biochemistry and from cell biology to hematology to human physiology. These programs in the past have contributed significantly to science, and there is reason to expect that they will continue to do so.

5. The medical instrumentation development of the Laboratory is of distinction [illegible]. It has [illegible] medical speciality; [illegible] promise of further development [illegible] the Laboratory is still [illegible] despite the [illegible] of past accomplishments and transfer of much of this development to commercial companies. We believe that there are many areas of instrument research extending the present machines and utilizing the special resources of the Laboratory.

6. The basic work in the biological science is expected to continue and be of high quality.

Hardin B. Jones