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 BATTELLE MEMORIAL INSTITUTE PACIFIC NORTHWEST LABORATORY
 P. O. BOX 999, RICHLAND, WASHINGTON 99352 - TELEPHONE 509-942-1111

- bcc: FW Albaugh
- EL Alpen
- WJ Bair
- FP Hungate
- DT Kirkland
- HM Parker ✓
- CM Unruh

REPOSITORY PNL, ENG. BLDG. AREA 3000
 COLLECTION LASER IRRADIATION
 BOX No. 2947
 FOLDER HSC 69-3

DEC 16 1969

Major William G. Harris
 Department of the Air Force
 Headquarters Aerospace Medical Division (AFSC)
 P. O. Box 35448
 Brooks Air Force Base, Texas 78235

RECEIVED
 DEC 17 1969
 H. M. PARKER

Dear Major Harris:

INVESTIGATION OF LASER SKIN HAZARDS (F41609-70-R-0015)

In reply to your letter of December 5, 1969 the following paragraphs supply more detail on the experimental approach in the human studies.

The human exposures will be conducted, as far as physical aspects are concerned, in the same manner as for the swine so that dosages and skin responses of swine can be related to those in man. Incident beam and reflected energy will be measured as with the swine. No data will, however, be obtained for the energy transmitted through the skin to deeper tissue layers of humans.

With the information obtained from studies with swine and reinforced with the human data available in the literature, estimates of the human erythema dose will be made. To assure that individual volunteers are not unexpectedly sensitive, each volunteer will be given a single pre-exposure of 0.1, the expected erythema dose, taking into account the pigmentation of the individual's skin. Skin response will be observed at an appropriate interval, anticipated to be 24 hours. Providing there is no evidence of special sensitivity, the subsequent exposures will be at 0.5, 1.0, and 2.0 times the predicted exposure level with subsequent readjustment up or down to bracket the erythema dose. We anticipate that such readjusting will be necessary only with the first few subjects studied.

The area of each exposure will be 1 cm² with interexposure distances of 1 cm. Each human volunteer will receive exposures

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to the flexor surface from all of the lasers being investigated. This will result in a minimum of 18 exposures plus the initial test exposure to each individual. Care will be taken to avoid repetitive exposures of the same skin areas in all cases. In instances where re-exposures are necessary, the opposite arm will be used. In all cases, the object will be to identify levels which do or do not produce erythema and to relate energy levels required to produce erythema with the degree of pigmentation.

Mr. Guttman also raised a few additional questions during the December 4 phone call. The answers to these questions are confirmed in the following. One question was with regard to the cost of pigs. As I indicated, our animals are members of a closed colony specifically bred and reared for experimental purposes. We have knowledge of their genetic and clinical histories as well as a depth of information about the breed.

A question was raised concerning intra-laboratory costs. Our facilities are spread over a distance of approximately 30 miles. Intra-laboratory costs are concerned with transportation of animals and equipment between different locations within our facilities. Also enclosed is a statement describing our cost category "laboratory costs" if this is a point of misunderstanding.

A third question concerned costs for use of equipment. These are costs for the use of equipment now on hand. It is not for rental of offsite equipment.

We have also re-examined our cost estimates and feel that they are consistent with the work proposed. We will, however, be willing to discuss costs if there are areas of effort which you and your review committee feel should be modified or eliminated.

I hope that this additional information is helpful in clarifying uncertainties in our proposal for "A Study Relating Dose Levels from Laser Radiation to Threshold Effects in Skin

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Major Harris

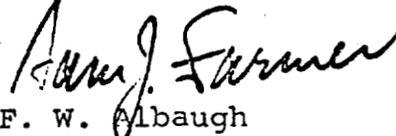
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(211B00170)." If there are other questions, please do not hesitate to contact me.

Should you have further questions regarding such contractual matters, please call D. T. Kirkland at (509) 946-2217.

Very truly yours,

for 
F. W. Albaugh
Director

Enclosure

cc: AMSKRB/W. S. Guttman

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LABORATORY COSTS

At Battelle-Northwest there are numerous "Cost Centers" in which administrative costs incurred for the benefit of a particular department or section are accumulated. These Cost Centers record and report costs (called Laboratory Costs) incurred for the sole benefit of the particular department or section involved. Costs accumulated in this manner may include a share of expenses for management, secretarial services, telephone, supplies, office supplies, laboratory equipment costing under \$100 which is purchased for general use, office services, medical, and other non-overhead costs which cannot be specifically identified with a particular program, but nevertheless benefit all of the programs or projects being conducted by a specific Cost Center.

The Laboratory Costs so accumulated are distributed among the programs or projects within that Cost Center as a percentage of staff labor costs charged directly to the projects.

This cost accounting method is used to assure that costs are charged in a manner as direct as possible, consistent with generally accepted accounting practices.

This accounting procedure has been in effect at Battelle Memorial Institute's Columbus Laboratory for a number of years and is similar to the procedures used by many industrial and research firms. It has been approved by Battelle-Northwest's and the Columbus Laboratories' cognizant audit agencies (AEC and DCAA, respectively).

Our estimate of Laboratory Costs is based directly on our recent cost experience in the particular Cost Centers which we expect to be involved in the performance of the program to which the estimate relates.

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HEADQUARTERS AEROSPACE MEDICAL DIVISION (AFSC)
BROOKS AIR FORCE BASE, TEXAS 78235



REPLY TO: P. O. Box 35448
ATTN OF: AMSKRE/W. S. Guttman

5 Dec 69

SUBJECT: Investigation of Laser Skin Hazards (F41609-70-R-0015)

TO: Battelle Memorial Institute
Pacific Northwest Laboratory
ATTN: Dr. D. D. Mahlum
P. O. Box 999
Richland, Washington 99352

1. Telephone conversation between you and Mr. Guttman/AMSKRB on 4 December 1969 is hereby confirmed and made a matter of record.
2. Your proposal in response to subject solicitation is presently undergoing evaluation. However, more specific detail is needed to substantiate your scientific approach to determine human skin thresholds.
3. In view of the above, it is requested that you review your proposal, furnish any additional information you want considered in your behalf, and submit a final offer so as to reach this office no later than 19 December 1969.


WILLIAM G. HARRIS, Major, USAF
Contracting Officer

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