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TO : Files

DATE: January 5, 1959

FROM : John C. Whitnah, Chief
Program Coordination Branch
Division of Biology and Medicine

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SUBJECT: VISIT TO BROOKHAVEN NATIONAL LABORATORY - DECEMBER 17-18, 1958

At the request of the Division of Biology and Medicine, a review of Program 6000 projects at Brookhaven National Laboratory was presented by the Director and staff of the Laboratory on December 17-18, 1958. Outlined briefly below are: (1) information relating to budget considerations; and (2) reflections on the procedures for review of projects within DBM.

1. Data Relating to Budgetary Considerationsa. Opening remarks by Dr. L. J. Haworth, Director, BNL.

Dr. Haworth described five general areas of research as a framework within which all BNL programs fall. These are (1) the atomic nucleus; (2) effects of nuclear radiation; (3) the use of nuclear tools and techniques; (4) metallurgy of reactor fuels; and (5) engineering application or development. He emphasized that each Department of BNL conducted basic research within its field of science, as well as cooperative research within the Laboratory and with the university community.

The present staff of BNL consists of approximately 300 regular members of the scientific and technical staff, 300 visiting scientists, 75 fellows and 1,300 supporting staff. Over-all plans call for a doubling of the research staff by the end of ten years.

b. Presentation of Biology Program by Dr. Howard J. Curtis.

Dr. Curtis described the Biology Program within the framework outlined by Dr. Haworth, pointing out that work is being undertaken in 20 fields grouped in two general areas: (1) radiation effects; and (2) nuclear techniques. In addition to these fields of investigation, outlined in the attached "program chart," the Biology Department annually sponsors a symposium in some field of biology. The subject for the 1959 symposium will be related to genetic structure and function.

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When asked to comment on the nature and extent of over-all program direction, Dr. Curtis discussed briefly the role of the BNL Visiting Committees and the meetings of the Bio-Med Program Directors. While experience with visiting committees varies, Dr. Haworth expressed the opinion that the BNL committees generally were quite useful. Their reports are submitted confidentially to the Laboratory. Members of the DEM staff pointed out that the project proposal sheets supporting budget requests generally do not contain enough information for an adequate review.

The following areas in biological effects were proposed by Dr. Curtis for expansion:

- (1) Mammalian physiology
- (2) Aging
- (3) Radiation genetics
 - (a) Plant genetics
 - (b) Microbial genetics
- (4) Biochemistry
 - (a) Molecular biology; ONA synthesis

He hopes to increase effort in two of the above fields during the current fiscal year, and in the other two areas in FY 1960. Dr. Curtis feels particularly that the aging project is the next big hurdle in the field of radiation biology, and believes that the project is appropriate for pursuit at BNL on the basis of past performance in the field and the wide diversity of its activities and facilities.

The need for an extension to the existing biology building for additional office, laboratory and animal breeding facilities was discussed by Dr. Curtis. Two alternatives were presented, one including facilities for dogs estimated to cost \$450,000, and the other without the dog facilities estimated to cost \$325,000. This project will be requested officially by BNL for FY 1961. Preliminary floor plans were made available. The building plans did not seem to be specifically related to approved areas of expansion of biological research.

The following table indicates the size and composition of the staff of the Biology Department. The figures for FY 1958 and FY 1959 were furnished by the AEC office at Brookhaven; the FY 1960 figures are present estimates of BNL, given by Dr. Curtis:

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	<u>1958</u>	<u>1959</u>	<u>1960</u>
Scientific			
Staff	19.08	19.8	
Research Associate	4.5	8.2	
Visiting	-	0.5	
Graduate Students25	1.0	
Temporary Consultant (Scientific)	6.1	5.5	
Total Scientific	<u>29.93</u>	<u>35.0</u>	36
Others	48.32	51.6	64
" Temporary (Other than scientific)50	.50	
Guests	8.33	8.5	

c. Presentation of program of Instrumentation and Health Physics.

The work of this Department comprises the fields of health physics, instrumentation, meteorology and general safety. In addition to the research and services provided in these fields, the Department conducts training programs in health physics and instrumentation including the radiological health fellowship programs in cooperation with the University of Rochester. Previous participants in the Rochester fellowship program have entered industrial plants and research laboratories, or are continuing their education. The present staff of the Department numbers 47 in health physics, 56 in instrumentation, and 11 in meteorology; it was estimated that by June 1959 there will be a staff of 50 in the health physics program. Dr. Kuper cited the following factors which will place additional demands on the work of the Department.

- (1) The resumption of the operation of the cosmotron.
- (2) The start-up of the medical research reactor.
- (3) Trends in methods of research, requiring mechanized data handling. This indicates an increase in services of engineers and technicians in both the design and fabrication of equipment and the maintenance of the equipment.
- (4) Technical assistance in the new computer contract.
- (5) The necessity of stationing a man at several of the complex research facilities.

The need for the new instrumentation and health physics building was emphasized; it was pointed out that present operations are scattered and that maintenance of existing buildings is increasingly difficult.

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Dr. F. P. Cowan, in describing the Department's work in health physics and dosimetry, outlined the following areas of interest:

- (1) Dosimetry around the cosmotron and AGS.
- (2) Research reactor operations, including the medical reactor and area monitoring for argon.
- (3) Waste disposal.

Mr. R. L. Chase, in describing the instrumentation program, pointed out that a major portion of the effort of the Instrumentation Division is financed by Intra-Laboratory Requisitions from projects in research or reactor developments.

Mr. M. E. Chase listed the following projects being conducted in the field of meteorology:

- (1) Long range vs. short range concentrations of radioactive dusts.
- (2) Automatic data processing.
- (3) Deposition of particulates.
- (4) Long range diffusion.

Some of these projects receive support from other Government agencies.

d. Presentation of Medical Research Program by Dr. L. E. Farr.

The Medical Research program has been developed on projects in two basic areas:

- (1) The use of radiation effects to further medical knowledge; and
- (2) The mechanism of radiation effects and their mediation to the biological system.

Dr. Farr outlined the twelve projects within which medical research at BNL is conducted:

- (1) Neutron capture therapy.
- (2) Trace metals physiology.
- (3) Radioactive constituents of man.

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- (4) Tracer studies
- (5) Cellular physiology
- (6) Leukemia
- (7) Hematology
- (8) Radiation immunity and allergy
- (9) Vitamin and acid metabolism
- (10) Carbohydrate metabolism
- (11) Protein and nitrogen metabolism
- (12) Activation analysis

In addition to these projects the Department participates in the Marshall Island surveys, and conducts medical conclaves supported by DBM.

Dr. Farr, when asked to distinguish between the medical research conducted at Brookhaven and that at other national laboratories, pointed out that BNL emphasized work on internal emitters, ORNL emphasized external emitters, and ANL emphasized problems related to radiation protection and particle accelerators.

The cost to operate a hospital bed at the Brookhaven Medical Research Center is \$34 per day. No charge is made to patients for several reasons: (1) it was considered desirable to foster the patients' relationship to his referring physician; (2) there might be greater flexibility in the design of investigation; (3) long periods of hospitalization would result in an exhaustion of Blue Cross benefits.

In presenting the budget status of the Medical Department, Dr. Farr stated that an additional \$171,000 would be needed in FY 1959, and presented the following data:

BNL Estimate of 12/58	\$2,446,000
Financial Plan FY 1959	<u>2,275,000</u>
	\$ 171,000

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The increase results from the following:

Marshall Island Survey	\$ 61,000
Conclave	19,000
Building adjustments and moving	50,000
Other	41,000
	<u>\$171,000</u>

These figures do not include an additional \$130,000, in construction funds, which has been requested by the architect. The Laboratory and AEC office expect to negotiate a reduced amount.

The following table shows the personnel status of the Medical Department:

	<u>Scientific</u>	<u>Other</u>
FY 1959 Year end	43	117
Man years	38.9	112
FY 1960 Year end	49	146
Man years	48	146

Dr. Farr stated that the staff should reach equilibrium by 1960.

e. Discussion of BNL Personnel Policy by Dr. Haworth.

Dr. Haworth described the "up or out" policy in effect for regular members of the Laboratory staff, through the ranks of Assistant Scientist, Associate Scientist, Scientist and Senior Scientist. A staff member may reach the rank of scientist within 6 years, at which time he is given a 3 year appointment. At the end of the total 9 year period he is either given a permanent appointment or leaves the Laboratory. The maximum period permissible for appointment as Assistant Scientist is 6 years.

2. Procedures for Review of Laboratory Program.

As a part of the regular budget submission, the various BNL Departments prepare individual project proposals for research by budget category and activity. It is apparent that these documents do not provide all of the information considered necessary for a review within DBM and further that they are not considered useful by BNL in systematically describing their research. It thus appears that they should either be revised or abolished.

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If program direction is to be effective it is essential that project responsibility for on-site as in off-site work be assigned within the Division. This solution is apparently widely recognized but difficult of accomplishment because of pressures of time on the scientific staff. On-site research programs constitute 70% of the financial support of the Division, and should receive a greater proportion of staff attention than at present.

During the discussion of BNL visiting committees, some interest was expressed by DEM staff members in receiving copies of the committee reports. Since these reports are treated confidentially by BNL they are not available to DEM. However, some use of technical consultants in program review and evaluation might be feasible, or at least considered from the standpoint of fiscal or procedural implications.

There was some discussion of the place of the Operations Office in the direction of programs at BNL. By present Commission policy, technical responsibility must rest within the Headquarters Division rather than with the Operations Office, even though the latter is responsible administratively for the operation of the national laboratory. This requires a high degree of cooperation and consultation within the Commission if effective communication with the laboratory is to be maintained.

During an evening conversation with the business officers of BNL, I was invited to return for a detailed review of the budgetary records and supporting data, an invitation I hope to accept. A fairly basic concept of budget submissions held by the Laboratory management that the function of BNL is basic research and that a description of "projects" is impossible must be reconciled with a requirement for information which can be used by DEM in allocating funds to accomplish its programmatic objectives, and in defense of its budget requests before the Bureau of the Budget and before Congress

cc: Dr. C. W. Shilling
H. A. Stanwood, Jr.