

ENERGY - OPERATING EXPENSES AND CAPITAL ACQUISITION

SCHEDULE 189

ADDITIONAL EXPLANATION FOR OPERATING OBLIGATIONS

| | | | | |
|--|--------------------------------|---------------------------|--------------------------|----------------|
| <u>Brookhaven National Laboratory</u> | | <u>GK-Multi-Resource</u> | | |
| <u>Laboratory</u> | | <u>Mission Resource</u> | | |
| 1. <u>Contractor:</u> | <u>Contract No.:</u> | <u>Task No.:</u> | | |
| Associated Universities, Inc. | EY-76-C-02-0016 | | | |
| 2. <u>Project Title:</u> | | <u>189 No.:</u> | | |
| Surveillance of Facilities and Sites Marshall Islands Radiological Safety Program | | 403109 | | |
| 3. <u>Budget Activity No.:</u> | 4. <u>Date Prepared:</u> | | | |
| GK-01-01-52-3 (a) 68-4 (600003) | March 1978 | | | |
| 5. <u>Method of Reporting:</u> | 6. <u>Working Location:</u> | | | |
| Annual Report to Division of Safety Standards and Compliance (SSC) Monthly Visits to SSC Scientific Journals and Meetings | Brookhaven National Laboratory | | | |
| 7. <u>Person in Charge:</u> | 8. <u>Project Term:</u> | | | |
| C. B. Meinhold | Continuing | | | |
| <u>Principal Investigator:</u> | From: | To: | | |
| N. A. Greenhouse (664-4250) | | | | |
| 9. <u>Person-Years:</u> | <u>FY 1978</u> | <u>Pres. Bud. FY 1979</u> | <u>Rev. Req. FY 1979</u> | <u>FY 1980</u> |
| <u>Direct Person-Years</u> | | | | |
| Scientific & Professional | 2.0 | 3.0 | 3.0 | 3.0 |
| Others | 2.5 | 2.0 | 4.0 | 4.0 |
| Guests & Research Collaborators | --- | --- | --- | --- |
| Total | 4.5 | 5.0 | 7.0 | 7.0 |
| 10. <u>Costs (In Thousands of Dollars):</u> | <u>FY 1978</u> | <u>Pres. Bud. FY 1979</u> | <u>Rev. Req. FY 1979</u> | <u>FY 1980</u> |
| Research Costs | 150 | 211 | 400 | 420 |
| Total Research Obligations | 198 | 218 | 369 | 427 |
| Equipment Obligations | 11 | 20 | 20 | 50 |
| 11. <u>Reactor Concept:</u> | 12. <u>Materials:</u> | | | |

Surveillance of Facilities and Sites

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13. Publications:

Greenhouse, N. A. and Miltenberger, R. P. Radiological analyses of Marshall Islands environmental samples from 1974 through 1976. BNL Report (in press).

Greenhouse, N. A. and Miltenberger, R. P. External radiation survey and dose predictions for Rongelap, Utirik, Rongerik, Ailuk, and Wotje Atolls. BNL Report (in press).

14. Scope:

(a) 200 Word Summary: A comprehensive radiological safety program will be maintained for the inhabitants of atolls in the northern Marshall Islands contaminated as a result of the U.S. Pacific Testing programs. The following items and services will be provided:

1. Environmental and personnel monitoring to provide data for BNL dose assessments and determination of radiological trends.
2. Individual and population dosimetry based on actual measurements. These data will be used to modify dose commitment predictive models so that they accurately reflect future trends.
3. Suggestions based on field experience to mitigate doses via the more critical pathways.
4. A flexible resource of radiological expertise to independently review radiation protection programs associated with rehabilitation efforts in the northern Marshalls, and for related health physics interests of OES in the Pacific Basin.

Program activities for the coming fiscal year will emphasize the following:

1. In vivo counting of Bikini and Enewetak residents. These efforts will define baseline body burdens of gamma-emitting nuclides for new residents at both atolls, and will periodically assess changes in body burdens over time which might result from various exposure pathways.
2. Urine bioassay to define radionuclide excretion patterns from individuals, and to estimate ⁹⁰Sr and transuranic nuclide burdens.

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14. Scope: (continued)

3. Definition of the annual contributions to dose via the inhalation pathway at Bikini, Rongelap, and Utirik. Special emphasis will be placed on continuous air sampling for wind-mediated resuspension of radionuclides in local soils; and on special measurements to define aerosol contributions resulting from human activity.

4. Development of radiological dose predictive models which involve both human and environmental monitoring data.

(b) Supplement to 200 Word Summary: The FY 1979 budget request contains a significant increase over the FY 1978 allocation. This increase reflects a realistic assessment of operating costs imposed by the in vivo counting, bioassay, and air monitoring activities begun in FY 1978. Additionally, field trip activities and analytical laboratory services have substantially exceeded original estimates for the basic radiological safety program, and these costs are expected to continue. Finally, there are a number of peripheral programs of mutual interest to BNL and OES which will be cost-effective if included with the basic efforts, manpower and budget permitting. These include in order of importance:

1. Definition of local diet patterns at all atolls of interest, and continuous monitoring of diets for seasonal changes and long-term trends which might impact on realistic dose predictions.

2. Incorporation of public information and education programs into the total BNL effort to minimize the adverse psychological and sociological impacts of local radiological conditions and of our efforts to understand them.

3. Retrospective assessment of the radiological picture in the northern Marshalls prior to the establishment of the BNL program in FY 1975.

4. Continued collaboration with UW/LRE on OES radiological programs.

15. Relationship to Other Projects:

This program will be logistically coupled wherever possible to the BNL Medical Program in the Marshall Islands. Technical collaboration will continue on matters of mutual interest. The radiological safety program will also bear directly on a retrospective reassessment of thyroid and whole body doses to the BRAVO fallout victims at Rongelap and Utirik, a new program for which funding is expected in FY 1978. The program will also interact cooperatively with related efforts at the University of Washington (LRE) and at Lawrence Livermore Laboratory.

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16. Technical Progress in FY 1978:

Several reports are in press or in progress for publication in FY 1978. These reports will summarize all BNL radiological program activities to date and identify the technical issues to be addressed in FY 1979 and 1980. Two field trips were made in October 1977 to initiate the BNL air monitoring programs at Bikini, Rongelap, and Utirik; and to establish the in vivo counting program. Sufficient field monitoring data will become available to assess average radionuclide body burdens for residents of Bikini, Rongelap, and Utirik, and to make a preliminary analysis of the inhalation pathway at these atolls.

Personnel and analytical laboratory resources are being mobilized to provide technical program support for the "13 Atoll Survey" which is expected during FY 1978.

At least two additional field trips are planned for FY 1978 to continue environmental surveillance programs at Utirik, Rongelap, and Bikini, and the study of trends in ^{137}Cs body burdens at Bikini. Field trip scheduling continues to be hampered, however, by uncertainties over logistics support.

17. Expected Results in FY 1979:

At least three field trips will be made to Bikini, Rongelap, and Utirik Atolls to conduct routine environmental surveillance and personnel monitoring activities. In addition, two or more field trips will be made to Enewetak to continue baseline in vivo counting and bioassay activities begun in FY 1978, and to initiate a new environmental surveillance program consistent with the return of control of the atoll to the Marshallese.

Average baseline radionuclide body burdens will be established for typical residents of uncontaminated atolls. Additional contributions to body burdens from environmental pathways on contaminated atolls will be determined for individuals and populations at Bikini, Rongelap, and Utirik. Definition of the inhalation pathway at the aforementioned atolls will be completed, and a working predictive model will be developed which incorporates environmental and pathway analyses with actual human uptake experience.

18. Expected Results in FY 1980:

Continuation of programs described in FY 1979.

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19. Description and Explanation of Major Materials, Equipment and Subcontract Items:

Capital Equipment - FY 1980:

Two phantoms (\$10,000) are required to provide adequate calibrations for the Marshall Islands In Vivo Counting program. A computer-based pulse height analyzer (\$40,000) is needed to maintain the division counting laboratory at state-of-the-art, and to provide independent analytical facilities for ultra-low-level sample counting.

20. Proposed Obligations for Related Construction Projects:

None.