DOE F 5120.2
(10-79)

401434

U.S. DEPARTMENT OF ENERGY

FIELD TASK PROPOSAL/AGREEMENT

1. WORK PACKAGE NUMBER	2. TASK NO.	3. REV. NO.	4. PROJECT NO.	5. DATE PREPARED (mm dd yy)	6. CONTRACTOR NUMBER
		0		03/31/80	HP 0510 (003010)

7. TASK TITLE
Dose Reassessment for Rongelap and Utirik

8. WORK PACKAGE TITLE

9. BUDGET AND REPORTING CODE	10. TASK TERM Begin: (mm dd yy)	End: (mm dd yy)	11. CONTRACTOR NAME	12. CODE (see instructions)
HA-02-01-01	Continuing	Open	Associated Universities, Inc.	BNL

13. CONTRACTOR TASK MANAGER (Name: Last, First, MI) (FTS No.)

C.B. Meinhold
666-4209

14. PRINCIPAL INVESTIGATORS (Name: Last, First, MI)

Naidu, J.R. (666-4263)
Greenhouse, N.A. (666-4250)

15. WORK LOCATION (See instructions): Name of facility, City, State, Zip Code

16. Is this task included in the Institutional Plan?
☒ YES ☐ NO

17. Does this task include any management services efforts?
☐ YES ☒ NO

18. TASK DESCRIPTION (Approach, relation to work package, in 200 words or less)

An in-depth study of all information pertaining to BRAVO test fallout on Rongelap and Utirik will be made. In addition, using advanced analytical and computer techniques, a comprehensive fallout model will be developed. Using this model in conjunction with dietary and life style patterns prevalent at time of exposure, a reassessed dose estimate--internal and external--will be made for the populations of Rongelap and Utirik. These dose estimates will be evaluated in terms of the thyroid nodule incidences in these populations, and the results obtained will provide information towards correlating doses and radiation effects.

19. CONTRACTOR TASK MANAGER

Charles B. Meinhold (Signature)

J.R. Naidu
N.A. Greenhouse

03/31/80 (Date)

20 DETAIL ATTACHMENTS (See instructions)

☒ a. Facility Requirements	☒ d. Background	☒ g. Future accomplishments	☐ j. Explanation of milestones
☒ b. Publications	☒ e. Approach	☒ h. Relationships to other projects	☐ k. ZBB Detail
☒ c. Purpose	☒ f. Technical progress	☒ i. Environmental assessment	☐ l. Other (Specify)

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TASK REQUIREMENTS FOR OPERATING/EQUIPMENT COSTS AND OBLIGATIONS

CONTRACTOR NAME: Associated Universities, Inc.

WORK PACKAGE NUMBER	TASK NO.	REV. NO.	DATE PREPARED	CONTRACTOR NUMBER
		0	03/31/80	HP 0510 (003010)

21. STAFFING *(in staff years)*	FY 1980 BY-2	FY 1981 - BY-1 PRESIDENT'S	FY 1981 - BY-1 REVISED	AUTHORIZED	BY-FY 1982
a. SCIENTIFIC	0.1	0.1	0.1		1.1
b. OTHER DIRECT	0.8	---	---		---
c. TOTAL DIRECT	0.9	0.1	0.1		1.1
22. OBLIGATIONS AND COSTS *(in Thousands)*					
a. TOTAL COSTS	50	53	53		119
b. TOTAL OBLIGATIONS	50	53	55		140
23. EQUIPMENT *(in Thousands)*					
a. EQUIPMENT COSTS	0	0	0		0
b. EQUIPMENT OBLIGATIONS	0	0	0		0
24. OTHER COSTS *(specify)*					
a.					
b.					
c.					
d.					

25. OPTIONAL FIVE-YEAR PLAN *(in Thousands)* Constant BY dollars	BY + 1	BY + 2	BY + 3	BY + 4
a. TOTAL OPERATING COSTS				
b. TOTAL OPERATING OBLIGATIONS				
c. TOTAL EQUIPMENT COSTS				
d. TOTAL EQUIPMENT OBLIGATIONS				

26. MILESTONE SCHEDULE	PROPOSED SCHEDULE	AUTHORIZED SCHEDULE

5010669

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TITLE	BUDGET AND REPORTING CODE			DATE PREPARED
Dose Reassessment for Rongelap and Utirik	HA-02-01-01			03/31/80
CONTRACTOR NAME Associated Universities, Inc	CODE BNL	WP NUMBER	TASK NO	REV. NO 0

20a. Facility Requirements.

It is anticipated that work for this proposal will use existing Laboratory facilities and site utility services.

20b. Publications.

Data generated in this study has been used in other reports.

20c. Purpose.

To look for correlations between the incidence of thyroid nodules in the inhabitants of Rongelap and Utirik Islands (Marshall Islands) and the reassessed dose estimates.

This study will fuse together all available information on fallout from the BRAVO test and using advanced analytical techniques (now available) derive realistic dose estimates to the inhabitants of Rongelap and Utirik. The results should provide information towards assessment of the risk coefficients for radiation-induced thyroid disease.

20d. Background.

Incidence of thyroid nodules, benign and malignant, in the exposed populations of Utirik and Rongelap has indicated critical differences in correspondence between nodule incidence and thyroid dose for the populations. The estimated external dose received from the time fallout began to the time of evacuation shows that the Rongelap population received an external dose (175 rads) which was about 13 times that for the Utirik population (14 rads), and the thyroid dose was about 10 times larger, whereas the incidences of thyroid nodules in the two populations were not significantly different.

A preliminary study has indicated that the critical area of investigation is the period starting from the beginning of fallout to the completion of evacuation for both the islands. In addition, the fact that the Utirik population returned within 120 days following evacuation, whereas the Rongelap population returned only after three years, requires that we look closely at the Utirik population in terms of a longer exposure period, both internal and external. Further studies would, therefore, have to concentrate on the re-examination of all available data in reports issued by various agencies during that period, consultations with scientific personnel involved at that time, identifying the areas of uncertainty, and using appropriate computer programs to analyze the data. The end result will enable us to look for correlations between the incidence of thyroid nodules and the reassessed dose estimates.

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20e. Approach.

The study will comprise:

a. Literature search for all available data concerning the BRAVO test, such as, meteorological conditions and radiation measurements. Discussions with scientific and technical personnel involved in the BRAVO test.

b. Use of historic samples and teeth samples to determine ^{129}I, ^{90}Sr, and $^{239, 240}Pu$ concentrations to derive concentrations of other radionucldies. In addition, excised thyroid glands from exposed Marshallese will be analyzed for ^{129}I and ^{99}Tc and data so generated will be used to estimate the concentrations of short lived iodine isotopes.

c. Diet and life style studies to provide information for dose assessment.

d. Computer simulation of the BRAVO test fallout to determine the transport and deposition of radionuclides.

Management Controls

Fiscal control will be exercised in the form of monthly comparisons, over the task term, of actual costs incurred against corresponding line items of the budget. Technical results shall be monitored through a periodic review, by the Contractor Task Manager, of accomplishments by measuring actual performance as compared to expected progress. All work shall be conducted in conformance with generally accepted standards for R&D and other investigative or analytic procedures, as observed by universities and large independent research facilities including Brookhaven National Laboratory (BNL).

20f. Technical Progress.

Technical Progress in BY-3 (FY 1979).

A preliminary literature search and consultations with Dr. C.A. Sondhaus, University of California, have been completed. This has resulted in defining areas of uncertainty in information available and establishing the procedural steps that should be carried out to reassess the dose estimates. All available data on external radiation measurements, radionuclide concentrations in soil, water, vegetation, animal and food items have been collated. Historic samples collected from Rongelap and Utirik have been submitted for ^{129}I analysis. Pertinent meteorological data pertaining to the BRAVO test has been researched and the information supplied to Lawrence Livermore Laboratory so that they can go ahead with the computer simulation of fallout transportation and deposition.

The ^{129}I determinations of the soil samples have been completed for those historic samples that were available. Some of these samples will also be analyzed for ^{99}Tc. In addition, we are exploring the possibility of analyzing "Bikini-

20f. Technical Progress cont.

ash" the fallout material that settled on the Japanese fishing vessel. These samples should provide the most accurate characterization of the fallout. Preliminary computer simulations of fallout transportation and deposition have been completed. Data analysis of the recent diet and life style study has been completed. Discussion with scientists and technical people who were involved with the BRAVO test is being continued. Analysis of the Marshallese teeth samples for Pu isotopes is in progress.

Expected Progress in BY-2 (FY 1980).

A final report on the diet and life style for the Marshallese will be completed. The computer simulation of fallout will also be completed. Thyroid glands from the exposed Marshallese will be analyzed for ^{99}Tc and ^{129}I. Analysis of the "Bikini-ash" will be done as soon as we get an aliquot of the sample. It is also expected that data on the exposed Japanese fishermen will be made available at that time. Preliminary analysis of the data generated so far will be made using existing models. The results will be extrapolated to present times so as to test the validity of the models used.

Expected Progress in BY-1 (1981).

Final dose estimates to the exposed inhabitants of Utirik and Rongelap should be completed. The methodology developed will be extended to Likiap and other islands which were on the "fringe" of the fallout pattern.

20g. Future Accomplishments.

The techniques and expertise developed in the course of this study could be used to reassess doses to population in other areas subjected to exposure from fallout or even those resulting from occupational situations in the past.

20h. Relationship to Other Projects.

a. This study will help establish dose estimates from the time of the incident to the present, and will complement the aerial survey for external radiation measurements, over these islands, which has been completed. Together they should present a reliable picture of doses received by the populations and also enable dose estimates to be projected into the future.

b. This study will be in close conjunction with the BNL Radiological Safety Program in the Marshall Islands (HA-02-01-02) and with related programs of the BNL Medical Department (HA-02-01-01). Continued collaboration with the University of Washington, Laboratory of Radiation Ecology, and the Battelle Pacific Northwest Laboratory will be maintained in the area of sample analysis and data interpretation.

TITLE	BUDGET AND REPORTING CODE			DATE PREPARED
Dose Reassessment for Rongelap and Utirik	HA-02-01-01			03/31/80
CONTRACTOR NAME Associated Universities, Inc.	CODE BNL	WP NUMBER	TASK NO.	REV. NO 0

20i. Environmental Assessment.

Work done under this task proposal has either no environmental impact or has impacts similar to those described in and covered by BNL's Environmental Impact Statement (ERDA 1540).

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