University of Rhode Island, Kingston, R.I. 02881
Graduate School of Oceanography, Narragansett Bay Campus

405439

March 16, 1978

PASO ROUTING SLIP

	A	I	SEE ME	INIT
DIRECTOR WS				
Admin. Assistant				
PROJECT ENGINEER	✓			
ADMINISTRATIVE OFF.		✓		
PROCUREMENT OFF.				

SPECIAL ROUTE TO:

CONTRACT REP.				
MAINT. REP.				

Wally returned this on 3/23/78.

Mr. William J. Stanley
Director, Pacific Area Support Office
U.S. Department of Energy
Box 29939
Honolulu, Hawaii 96820

Dear Mr. Stanley:

The attached information concerning the NSF SEAREX Program at Enewetak is provided to clarify the objectives of this research program and the extent of our need for support during our stay at Enewetak. We are aware of the many demands on the Joint Task Group and Holmes and Narver on Enewetak, and we will make every effort to keep our requirements minimal and be as self-sufficient as possible. We have had considerable experience with the type of facility proposed here, with similar systems already constructed in Bermuda, American Samoa, and Antarctica. Thus, I believe we will not be a burden on the primary mission of the personnel on Enewetak during our stay there.

In the enclosed outlines we attempt to explain the objectives of the SEAREX Program; to give outlines of both the tower and the modular building; to spell out our electrical power requirements; and to define the extent of our need of Holmes and Narver.

Dr. Robert A. Duce, the SEAREX Executive Committee Chairman, will be in Honolulu on Thursday, 23 March, 1978. During that time he will be visiting with Dr. Victor Johnson of MPML and Mr. Joseph Merrill of the DOE, and he will be able to answer any questions which may still exist after reading these enclosures or to answer any new questions which may arise.

Meanwhile, should any area need immediate attention, please call me at area code 401-792-6256.

Your assistance and continued interest in the SEAREX Program is greatly appreciated.

Very truly,

Roger J. Cayer, Jr.
SEAREX Coordinator

Enclosures

RJC/vec

cc: Mr. Harry Brown
Mr. Joseph Merrill
Mr. James Miller
Dr. Victor Johnson

REPOSITORY DOE/PASO
COLLECTION DOE/NV
BOX No 1234
FOLDER SEAREX- Jan 1978- Oct 1979

I. OBJECTIVES OF SEAREX

The Sea/Air Exchange (SEAREX) Program is a multi-institional program funded by the National Science Foundation, Office for the International Decade of Ocean Exploration. The objectives of the overall program are threefold:

1. The quantitative measurement of atmospheric fluxes of selected heavy metals (e.g., Pb, Cd, Zn, Se, Sb, As, Cu, Hg, Ag), ^{210}Pb and its daughter ^{210}Po and organic compounds such as the man-associated PCB, DDT, polynuclear aromatic and aliphatic hydrocarbons, phthalate plasticizers and the natural occurring steroidal and terpenoid hydrocarbons, fatty acids and alcohols, low molecular weight compounds such as ketones, aldehydes, and carboxylic acids to the ocean surface.

2. The identification of the sources for these substances in the marine atmosphere.

3. The investigation of mechanisms of exchange of these substances across the sea/air interface.

To atain these objectives a program of 5-6 years duration is expected. Major components of the program include:

1. Estimation, from rain and dry deposition measurements, of the flux of heavy metals and organic substances during the wet and dry seasons at Mid-Pacific sites in the North and South Pacific Ocean. These sites will be at Enewetak Atoll in the North Pacific trades and at Tutuila Island, American Samoa in the South Pacific trades.

2. Investigation of the importance of the ocean as a source for atmospheric heavy metals and organic substances through enrichment and fractionation effects occurring during the production of atmospheric sea salt particles by bursting bubbles. These studies will be undertaken using the Bubble Interfacial Microlayer Sampler (BIMS) developed at the University of Rhode Island together with an assessment of the natural occurrence of bubbles under varying conditions.

3. Evaluation of the significance of soil and vegetation emissions, forest fires, and chemical manufacturing sites as sources of the volatile metals and organic substances found in the marine atmosphere.

4. Identification of the natural or anthropogenic origin of Pb in marine aerosols by means of Pb isotope tracers and mass balance relationships of present atmospheric input fluxes with prehistoric sediment output fluxes.

5. Investigation, using classical as well as sophisticated laser fluorescence techniques, of the distribution and exchange between the particulate and vapor phase of organics and of the relatively volatile heavy metals such as Pb, Cd, Zn, Se, Sb, As, Cu, Hg, and Ag.

6. Investigation of bubble surface area and volume spectra in the sea and the relative importance of single bubbles and bubble rafts as sources of atmospheric spray and sea salt particles, both as a function of wind speed.

Item No. 1, above, is the only item to be undertaken at Enewetak Atoll. Details of the timing of the Enewetak experiments are given in Section II.

The ten participating institutions include:

University of Rhode Island
University of Connecticut
California Institute of Technology
Woods Hole Oceanographic Institution
Scripps Institute of Oceanography
Texas A & M University
University of Miami
CFR/CNRS, France
Yale University
Naval Research Laboratory, Washington, D.C.

SEAREX is operated through a three man Executive Committee, consisting of Robert A. Duce, Graduate School of Oceanography, University of Rhode Island, Chairman (401-792-6256), Robert B. Gagosian, Woods Hole Oceanographic Institution, Woods Hole, Mass., and Edward D. Goldberg, Scripps Institution of Oceanography, University of California, San Diego. Administration and central coordination of SEAREX is through the Graduate School of Oceanography, University of Rhode Island. The SEAREX Field Program Coordinator is Mr. Roger Cayer, Graduate School of Oceanography, University of Rhode Island (401-792-6256).

II. TIME TABLE FOR SEAREX IN ENEWETAK

In keeping with the objectives of the entire SEAREX program, it is necessary that we sample from the same experimental station during both a wet and dry season. For this reason it is necessary that we man the Enewetak Tower during January-March 1979, the dry season, and July-September 1979, the wet season. To meet this schedule, it will be necessary to send a crew of four people during the period of 21 November-20 December 1978 for the purpose of constructing the tower and setting-up the experimental equipment. Five people will be at the site during the wet and dry season experiments. MPML has indicated that they will be able to house these people. Our schedule is summarized below:

SEAREX TIME TABLE - ENEWETAK

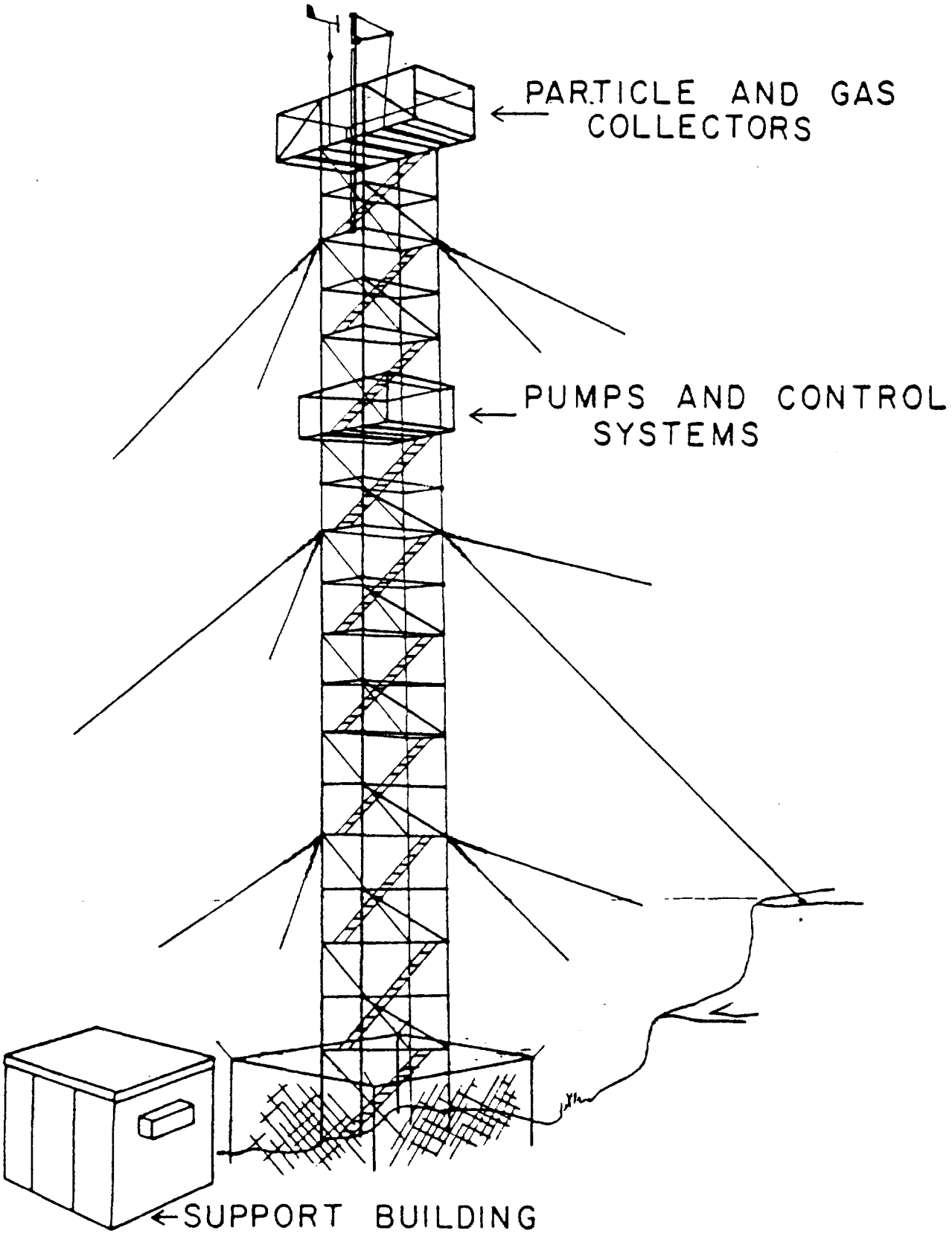
EVENT	DATES	NUMBER OF SCIENTISTS
Site Construction	21 November - 20 December 1978	4
Dry Season Flux Experiment	9 January - 7 March 1979	5
Wet Season Flux Experiment	3 July - 5 September 1979	5

III. SAMPLING TOWER AND MODULAR SUPPORT BUILDING DESCRIPTION

For our atmospheric studies on Enewetak we must be removed as far as possible from local contamination. Thus we would like to undertake our experiments, and locate our sampling tower and support building, on the northeast side of Sand Island.

We anticipate the sampling tower will be shipped in four pieces with a total volume of 600 ft^3 and a total weight of 3600 lbs. The tower is 60 feet high when erected, and is constructed of an aluminum alloy. It is composed of ten 6 foot collapsible sections, each fitting on top of the one below. The cross sectional area of the tower is 4' x 6', with additional 6' x 6' outboard platforms at the 10th level and 4' x 6' additional outboard platforms at the 7th level. Several diagrams of the tower are attached. The base of the tower is 4 small concrete pads, about 18" x 18", which we will pour ourselves. We will also be completely responsible for the tower construction and installation of guy wires.

The modular scientific support building, is to be located at the tower's base. It is a heavy duty aluminum, skid mounted, portable building with a fiberglass roof covering. The building will be shipped entirely erected weighting approximately 2800 lbs. and having a volume of 1000 ft^3. The building requires no foundation on Sand Island and will be secured with guy wires.


PARTICLE AND GAS COLLECTORS
PUMPS AND CONTROL SYSTEMS
SUPPORT BUILDING