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January 17, 2000

VIA FACSIMILE AND EMAIL

Frank Hawkins  
Director, Office of International Health Programs  
U.S. Department of Energy  
EH-63/270CC  
19901 Germantown Rd.  
Germantown, Maryland 20874-1290

Re: Enewetak/DOE MOU

Dear Mr. Hawkins:

The purpose of this letter is to respond to changes/deletions introduced by the DOE to the draft Memorandum of Understanding (MOU) recently submitted in behalf of the Enewetak/Ujelang Local Government Council ("Enewetak Council") and the Government of the Republic of the Marshall Islands ("RMI").

Monitoring Necessary to Ensure the Safety of the Enewetak People

The objective of the Enewetak Council and the RMI in the draft MOU was to include the monitoring necessary to ensure the safety of the Enewetak people from the residual radiological contamination at Enewetak Atoll. This included whole body counting of individuals for the detection of cesium, urinalysis for the detection of plutonium, an assessment of tracer chemicals which could pose significant environmental and human health risks, monitoring the radioactive waste disposal site at Runit island, and environmental surveillance of the plutonium contaminated Fig/Quince area of Runit Island. These monitoring activities were described as necessary and appropriate by our scientific consultants, Sanford Cohen and Associates.

Unfortunately you deleted all of the above described monitoring activity except for the whole body counting of individuals. Your deletion of the provision regarding urinalysis for the detection of plutonium is particularly difficult to understand since it was included in several prior MOU's drafted by the DOE, was agreed to be a necessary component of human monitoring during the 1994 DOE annual meeting, and was described to us by you during our October 1998 meeting in Washington D.C. as a function that would be continued by Lawrence Livermore Laboratory after the termination of Brookhaven National Laboratory.

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Most disturbing is the failure of the DOE to conduct any type of monitoring at Enewetak for the past year and a half although you are provided funding by the Congress to do so. Your excuse for unilaterally terminating the monitoring was that such monitoring would not recommence until an MOU between the DOE, Enewetak Council, and the RMI Government was agreed to. This is an unconscionable position. It is particularly unconscionable since monitoring occurred for a period of over 20 years without any MOU. The health of the Enewetak People should not be held hostage to the finalization of a MOU.

Congressional and DOE Commitments to Monitor the People and Environment affected by the Nuclear Testing Program

Congressional Commitment. Although by no means complete, the following Congressional reports point out the importance of the Northern Marshall Islands program and the need to continue DOE monitoring.

1. H.R. Rep. No. 100-618 (100th Cong., 2d Sess. 90) (May 11, 1988): This report, on the FY 1989 Energy and Water Development Appropriations Bill, singled out only one issue -- the Northern Marshall Islands program -- in the \$460 million budget for nuclear testing activities. The report stated:

The Committee recommendation includes funding at the current level to continue the health and environmental programs on all the affected atolls of the Marshall Islands. The Department [of Energy] is directed to prepare a report on a coordinated plan for this effort for future years, including estimated costs and sources of funding.

2. S. Rep. No. 100-381 (100th Cong., 2d Sess. 150) (June 9, 1988): For FY 1989, Senator Johnston's Committee recommended \$467.3 million for the testing program, including \$4,850,000 for the Marshall Islands. Significantly, the Marshall Islands program again dominated the entire Committee report, with Congress again directing the Department of Energy "to prepare a report on a coordinated plan for continuation of these efforts in future years, including estimated costs and sources of funding." The report also contains the following unequivocal Congressional commitment to this program:

Congress has recognized our moral obligation to continue radiological monitoring and health care for those Marshallese affected by the nuclear testing program; and the Committee recognizes the concern of the affected peoples regarding these activities and expects that the Department will cooperate with them in providing for external review of the Department's activities.

3. S. Rep. No. 101-83 (101st Cong., 1st Sess. 135) (July 25, 1989): For the Energy and Water Development Appropriation bill, 1990, Senator Johnston's Committee recommended an

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increase to \$5,637,000 for the Marshall Islands program, once again stating unequivocally its view that the program should continue at least at the current funding levels:

The Committee expects the Department to continue these efforts in future years (at the current level of activity and as adjusted for inflation) in order to verify that the people of the affected islands will continue to be safe from the effects of previous U.S. testing and to protect the United States from risks of future legal claims. The Committee expects the Department to continue to cooperate with the Marshallese affected by the testing program, including providing for external review of the Department's activities.

In accordance with the Congressional directive, radiological monitoring of Enewetak Atoll should have occurred in 1999. It did not because you insisted on an MOU. This MOU process began in October 1995 during a visit to Enewetak by Dr. Pettengill. We spent days negotiating the terms of a MOU and it was our understanding that the MOU negotiated at Enewetak would be implemented. It was not. Over the past several years a number of proposed MOU's were passed back and forth without any resolution. Nonetheless, the monitoring activity at Enewetak continued up until May 1998 when you decided that no further monitoring would occur without a MOU. The monitoring activity that occurred through 1998 was based on DOE commitments.

DOE Commitments. The DOE radiological monitoring commitments to the resettled population at Enewetak began in 1978. In a letter dated December 28, 1978 to the GAO regarding DOE's comments to the GAO draft report on the Enewetak partial cleanup, the DOE stated as follows:

DOE is committed to perform long-term radiological follow-up of Enewetak residents and their environment including monitoring of any effluent from the disposal of contaminated debris and soil on Runit Island.

Note that this commitment was made without any MOU and included the monitoring of Runit Island.

In the course of the DOE annual review meeting in Honolulu in 1994, this commitment was reaffirmed by an agreement that one-half of the Enewetak population be whole body counted each year, that urinalysis for plutonium be conducted for approximately 75 persons annually, that the fresh and sea water surrounding the radioactive waste disposal site at Runit Island be sampled and analyzed, and that the marine life around the radioactive waste disposal site at Runit Island be sampled and analyzed.

Such commitments were further reaffirmed in a letter dated September 18, 1995 from the DOE to the RMI. In that letter, the DOE answered a number of questions relating to the monitoring program at Enewetak. The questions concerned the type of monitoring and the costs associated

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with that monitoring at Enewetak by use of a land based facility. The relevant questions and responses are found in pages 15 to 19 (questions 32 through 43 and responses) of the DOE letter. In that letter the DOE said that whole body counting would be conducted at Enewetak at no cost to the Enewetak community, that urinalysis would be conducted at Enewetak at no cost to the Enewetak community, and that environmental work including monitoring of Runit would be performed. For example, in response to question 40 concerning the cost of whole body counting and urinalysis of the Enewetak population, and the cost of the land based facility at Enewetak, the DOE said:

There are no costs to the Enewetak community associated with the program at Enewetak. We will reimburse Enewetak for any space, air conditioning, and electrical costs that we understand will result from use of a room in the field station, and for any lodging support needed by visiting DOE personnel.

Not only did the DOE commit itself to whole body counting, urinalysis, and environmental monitoring, it committed to do so at no cost to the Enewetak community. Unfortunately your recent changes/deletions to the MOU violate those commitments.

In addition to the foregoing, when we met with you in October of 1998 you told us that urinalysis would continue with perhaps a different method than had been employed by BNL. You also said that the whole body counting and urinalysis activities at Enewetak would be undertaken by Lawrence Livermore Laboratories. Your proposed MOU does not reflect that commitment.

Please also note that your suggestion that the Enewetak MOU follow the Rongelap MOU is misplaced. Enewetak is the only resettled population in a radiologically contaminated environment. In addition, Rongelap's cleanup and resettlement funding specifically provides funds for scientific monitoring activities at Rongelap. We do not have such funding. Enewetak requires further cleanup and until the necessary funding is provided for such cleanup, the Congressionally directed monitoring activities must be provided without delay to ensure the health and safety of the Enewetak People.

#### Current Radiological Conditions at Enewetak and Institution of Appropriate Safety Standards

In April of 1999, S. Cohen and Associates, Inc. submitted a comprehensive two-volume report to the Enewetak Council regarding current radiological conditions at Enewetak as well as an evaluation of the costs associated with various future remediation strategies. The study's principal source of information was survey data reported by the DOE and by the RMI's Marshall Island Nationwide Radiological Study. In brief, the SC&A Study concluded the following:

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- (1) Many of the islands representing Enewetak Atoll have persistently high levels of residual contamination;
- (2) ingestion of contaminated local food products represents the dominant exposure pathway;
- (3) resettlement of these islands and/or their use for food procurement/production would lead to radiation doses well in excess of current U.S. EPA and Nuclear Claims Tribunal adopted limits;
- (4) resettlement and unrestricted use of the Atoll's islands would require extensive remediation and rehabilitation efforts in order to comply with existing U.S. cleanup standards as defined by the DOE and EPA; and
- (5) for the various remediation efforts assessed, estimates of cost ranged from about \$75 million to more than \$150 million and would at a minimum require several years for completion.

In context of these conclusions, the intent of our draft MOU is to establish a framework for cooperation among the parties that will ensure the safety of the people with regard to radiation risks that may result from residual contamination at Enewetak Atoll between now and the time of remediation leading to unrestricted use.

Given the history of the U.S. nuclear weapons testing program in the Marshall Islands and its tragic impacts on local population groups, it is imperative that current U.S. standards pertaining to stewardship, long-term surveillance and exposures to members of the public are instituted at Enewetak without further delay.

The draft MOU submitted by the Enewetak Council was intended to provide this interim measure of public safety. Subsequent changes and deletions introduced by DOE will most certainly compromise this intent and demonstrate a continued disregard toward the safety of the residential population of Enewetak. We believe you should reassess your position based on the preceding portions of this letter and based on the issues identified and explained below.

#### Issue #1 - Institutional Controls/Environmental Assessment for Runit Island

Runit Island is the fifth largest island at Enewetak Atoll, but it continues to be quarantined due to the presence of an LLRW facility (i.e., Cactus Crater) and the Fig/Quince Area containing soil contaminated with Pu-239 particulates.

Cactus Crater. Between 1977-80 the Enewetak Atoll Radiological cleanup dug up and removed soil from locations where long-lived transuranic sources exceeded DOE guidelines at the time.

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The most abundant isotope of the long-lived alpha-emitting transuranics was Pu-239. In total, about 100,000 cubic yards of contaminated materials were disposed in the Cactus Crater created by a nuclear test blast at the northern tip of Runit. The contaminated material was deposited as a soil-cement matrix, covered by a concrete cap, and surrounded by a key wall to guard the contents against the destructive impacts of ocean wave action.

Concerns, however, have been raised about possible failure of crater entombment. Failure modes that might result in breaching of the dome include long-term weathering, foundation settling, generations of methane gas from decomposition of organic waste, shrinkage and cracking, tsunamis and typhoon activities.

Previously, each of these failure modes was considered to pose a realistic threat. For example, typhoons are a reality in the Marshall Islands; during the three-year cleanup effort of Enewetak Atoll, four major typhoons and tropical storms threatened Enewetak.

Another concern that has been raised with Cactus Crater is leaching. In March of 1980, members of the National Academy of Sciences Committee visited Runit to conduct a series of sampling and observations. Tests included taking solid-core samples from bore holes drilled through the soil-cement and tremie fill. Their analysis showed that the soil-cement mixing by the tremie method was not fully successful and did not achieve the desired concrete-like character that had been assumed. It was concluded, therefore, that at least part of the disposed radioactivity is available for leaching and transport to the underlying groundwater and lagoon.

As a low-level radioactive waste disposal site containing long-lived transuranic contaminants, employing an unproven disposal method, and vulnerable to numerous environmental threats, Cactus Crater is in need of stewardship that includes institutional controls.

Institutional controls refer to those measures which assure long-term containment of waste, restrict access to the disposal site, and provide early warning of radioactive releases that have the potential for environmental contamination and human exposure.

Applicable or relevant and appropriate requirements (ARARs) for institutional controls are cited in 10 CFR 61 and 40 CFR 192. In addition to restricted site access, post-closure environmental surveillance of the disposal site must be capable of identifying radionuclide releases from the disposal package before they leave the disposal site boundary. At a minimum, surveillance must include periodic site inspections along with some limited sampling of groundwater, soil, and environmental biota.

Fig/Quince Area. A review of a Defense Nuclear Agency (DNA) report reveals that a strip of land approximately 300 meters by 100 meters on Runit Island could not be decontaminated to the

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desired cleanup objectives at the time of the 1977-80 cleanup of Enewetak Atoll due to schedule constraints and the limited disposal capacity of Cactus Crater.

Residual transuranic contamination in this area was shown to range from 12 to 1,120 pCi/g (see Figure 8-41, page 547 of the 1981 DNA report). Rather than continue soil removal to the point of the original cleanup objective, about 12 inches of relatively "clean fill" was placed over the area. The final TRU concentration in this upper layer of fill was shown to range from 3 to 253 pCi/g with an average of 73 pCi/g (see Table 8-42, page 458 of DNA 1981). To complicate matters, it is highly probable that the residual contamination in the Fig/Quince area exists in the form of discrete microscopic metal fragments or "hot" particles.

The use of a 12-inch fill cover can at best be viewed as a temporary means to contain the contaminants at Fig/Quince. Thus, after twenty years, there is reason to question the status of this protective cover that has been continuously subjected to erosion effects of winds, rains, storms, etc.

In light of the limited effort put forth to adequately contain contamination in this area, there is an obvious need for continued environmental surveillance.

#### Issue #2 - In vivo/ In vitro Bioassay Program

Pursuant to DOE monitoring activities, an attempt was made to conduct baseline and annual whole body counts (i.w., in vivo bioassay) for the detection of internalized Cs-137 and urinalysis for the in vitro detection of internalized alpha-emitting transuranics. Past efforts to provide this service have failed for reasons that include the sporadic implementation of a bioassay program, contamination of samples, failure to interpret data and maintain auditable records, and failure to provide results to individuals assessed. On March 11, 1999, Dr. Paul Seligman, Deputy Assistant Secretary for Health Studies, submitted to the Enewetak Council a "report" that explained the technical basis for the in vitro measurement of plutonium and other actinide elements. The very fact that DOE submitted this report to the Enewetak Council suggests DOE's acknowledgment for the need to conduct urinalysis.

The residual presence of actinides within the Atoll demands both a comprehensive baseline assessment and continued future routine surveillance of resettled persons. It must be acknowledged that many of the uninhabited islands of Enewetak with significant levels of cesium and transuranic contamination are, nevertheless, routinely frequented by Enewetak residents for a variety of reasons that include food gathering.

In summary, based on DOE's contractual commitments and the realistic threat of human exposure to transuranics, it is difficult to understand DOE's deletion of its obligation to provide urine sample analyzes.

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Issue #3 - Investigative Survey Pertaining to Tracer Chemicals Used in Nuclear Weapon Tests

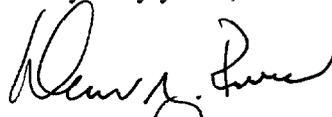
Only recently has DOE acknowledged the use of tracer chemicals that were linked to nuclear weapon tests. Due to persistent need to regard this information as classified, the DOE, however, has not provided the necessary definitive data regarding quantities, times, and locations of their use.

A cursory assessment of tracer material quantities and their chemical/radiological toxicities leads the Council to a reasonable assumption that these materials may in the past have posed (and in some cases continue to pose) environmental and human health risks. Among the tracer elements posing past and/or present concern are sulfur, thallium, thorium, and uranium.

Given their potential risks to human health and the environment, a reasonable request at this date is for a more detailed disclosure regarding the use of these tracers and/or an investigative environmental survey that would assess the persistence of these materials in soils and other environmental media.

Conclusion. The draft MOU submitted to you in behalf of the Enewetak Council and the RMI addresses the Congressional directive for radiological monitoring, prior DOE commitments to the Enewetak people, and appropriate safety standards consistent with those employed in the U.S.. The Enewetak People as a resettled population deserve no less. We trust that you will reconsider your deletions/changes to the draft MOU and commence the necessary monitoring without further delay.

Very truly yours,



Davor Z. Pevec

cc: Senator Ismael John  
Mayor Neptali Peter