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Executive Office of Health and Human Services
Department of Public Health
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January 28, 1997

Hubert Miller
Administrator
NRC, Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Miller:

This letter is in response to a request from Richard Laura, the Senior Resident Inspector at the Pilgrim Nuclear Power Station, concerning a graph that he received from an individual representing the Citizens Monitoring Network that showed a "spike" on December 6, 1996. Mr. Laura has asked me to respond directly to you in terms of our conclusions concerning this "spike".

As you may recall, during my presentation to Chairman Shirley Jackson, yourself, other NRC representatives and key individuals from Boston Edison Company on December 19, 1996, I briefly responded to Mr. Laura's question concerning the graph (Attachment A) that had been supplied to him by a representative of the Citizens Monitoring Network. As requested, I offer the following additional comments in support of my verbal response during that meeting:

1. Through the operation of our ring monitoring and high school monitoring systems, we have noted consistent associations between certain environmental conditions and changes in measured radiation levels. Most notably, these associations occur between rainfall (increasing measured radiation levels) and snowfall (reducing radiation levels). Such effects are well documented in the literature and predictable.

2. Moderate to heavy rainfall appears to wash down short-lived radioactive particulates dispersed throughout the lower atmospheric resulting in measurable increased radiation levels at ground level or on rooftops where some monitors

are located. Based on the very short duration of these peaks and our knowledge of the behavior of naturally occurring environmental radiation sources, it appears that these increases result principally from radon gas daughters, ostensibly lead and bismuth. We believe it is unlikely that longer lived radioactive isotopes (such as fallout from weapons tests or nuclear power facilities) would result in these short duration peaks.

3. In reference to the graph in question, we have considered the possibility that such increases were in some way related to radioactive effluents from a nuclear power facility such as PNPS. This seems unlikely for several reasons:

   A. These measured increases occur to some degree and with some consistency whenever significant rainfall is measured suggesting the association is with rainfall rather than some operational transient or irregularity.

   B. We generally note similar increases in radiation levels for similar or identical periods of time at all distances from the PNPS facility. Such patterns of environmental radiation do not indicate a point source of pollutant but instead suggest a wide-area effect such as widespread rainfall.

   C. The apparent short duration of these measured increases in radiation levels suggests a source of short-lived radioactive material which is generally not characteristic of a commercial nuclear power facility. Short lived isotopes are not likely to survive long enough to result in the measured increases at the distances reported unless they were released in extraordinary quantities which would be easily detected by our ring monitors.

Attached, please find radiation levels for the ring monitors 1-14 for the same time period showing similar peaks (Attachment B) and graphs showing rainfall and radiation from two high schools for the same period (Attachment C). Additionally, I also wish to point out that we have mentioned previously to the Citizens Monitoring Network:

a. our concerns with their choice of the scale on the "Y" axis which tends to exaggerate the "peaks";

b. their use of the "established millirems per year" scale which implies that the short duration peak would result in that associated annual dose; and,

c. their reference to Cesium-137 on their graphs which we understand merely relates to their instrumentation calibration source.

We trust the above satisfactorily responds to your inquiry and would like to assure you that the Department of Public Health has, on numerous occasions, offered to assist the Citizens Monitoring Network of Pilgrim in reviewing and interpreting their data. Presently, we deal with the Network through Mr. Jack Hoover, their representative for this type of activity. However, in this case, Mr. Hoover did not contact us concerning this graph. We would urge that if the NRC Senior Resident Inspector at Pilgrim receives similar inquiries that you immediately contact us so that we can coordinate these materials directly with the Network's official representative, Mr. Hoover.

We trust the above satisfactorily responds to your inquiry, and if you have any further questions or issues, please call me at 617-727-6214.

Sincerely,

Robert M. Hallisey, Director
Radiation Control Program

:pjd

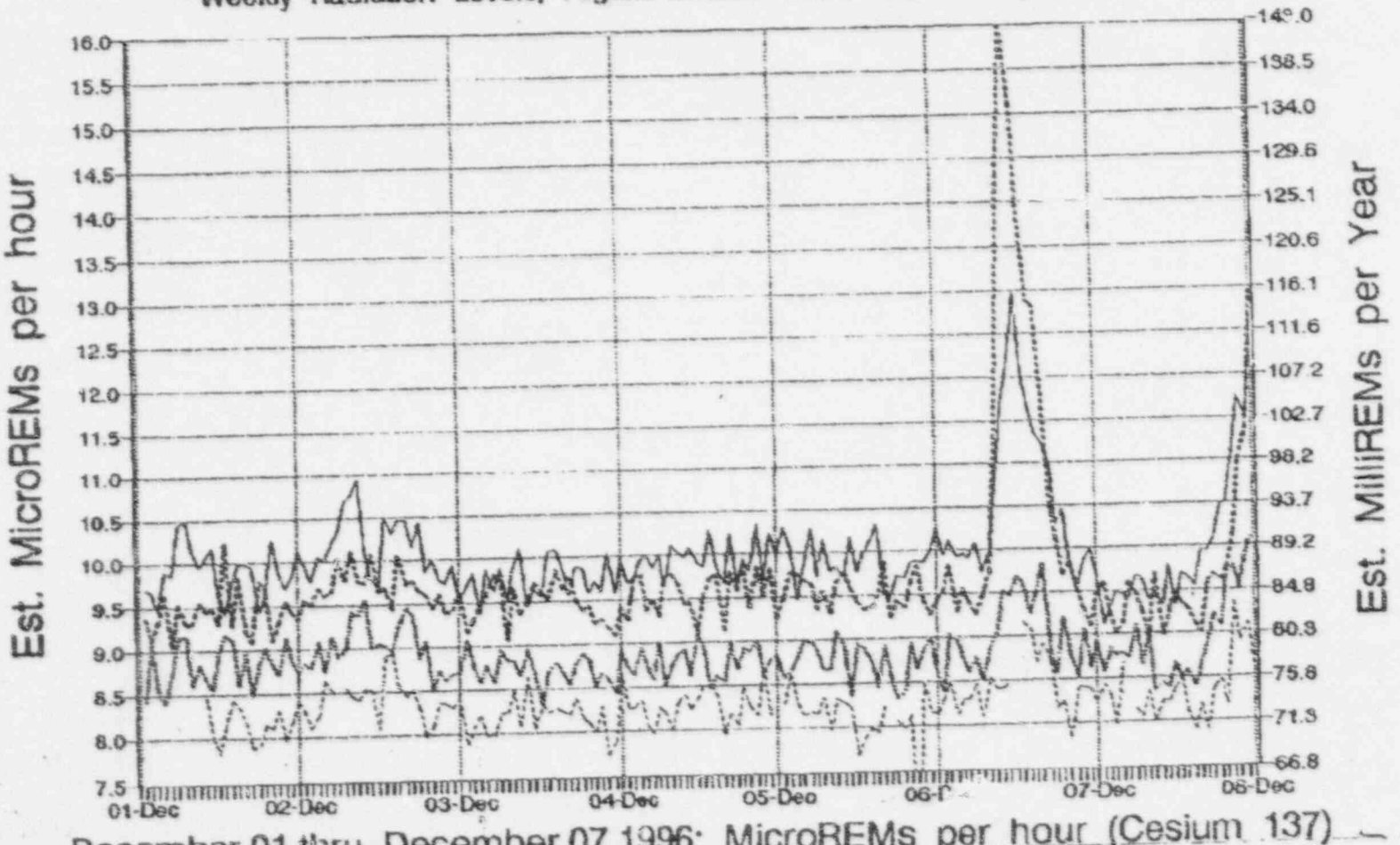
Attachments (3)

cc: Richard Conte, NRC
Richard Laura, NRC
Larry Harrington, MDPH
Tom O'Connell, MDPH

ATTACHMENT A

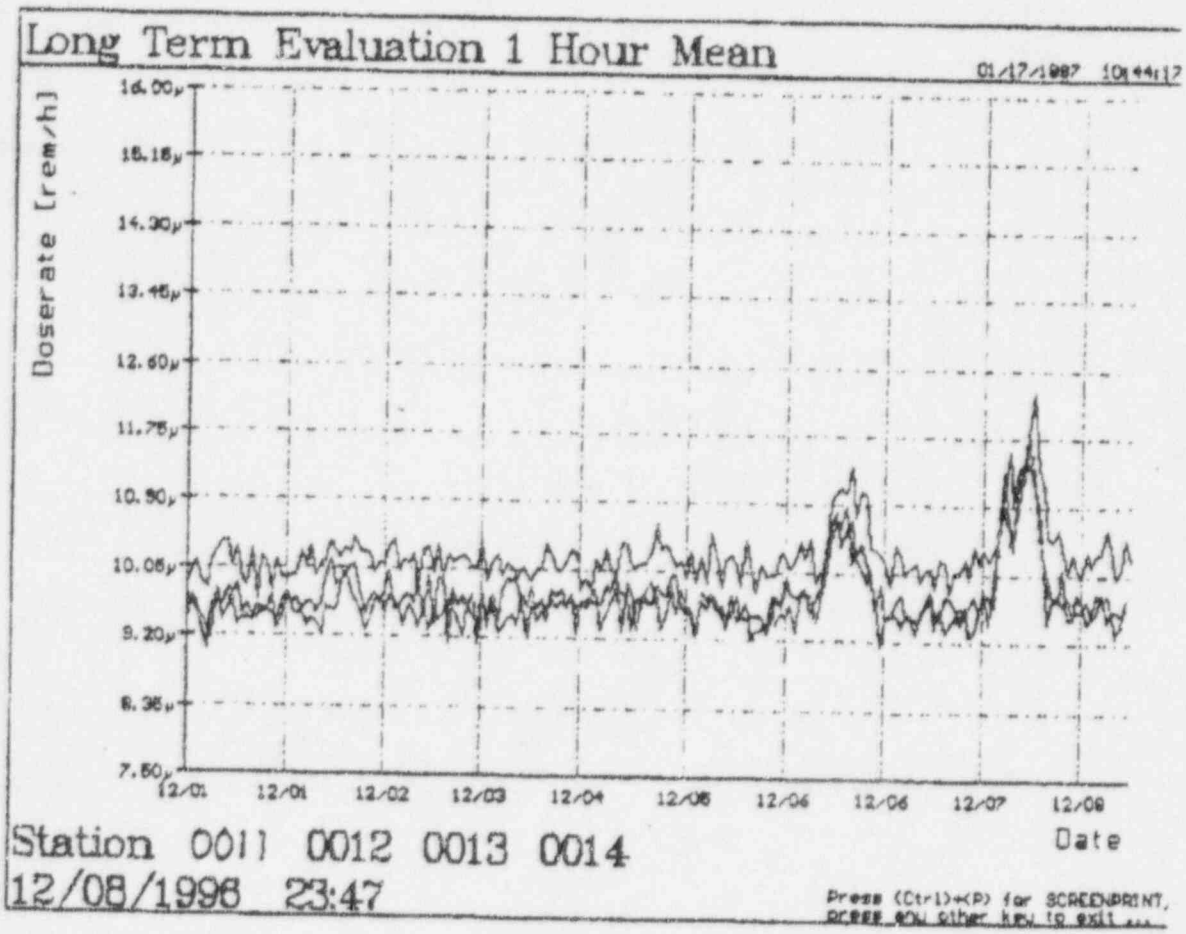
Citizen's Radiological Monitoring Network, Pilgrim Inc.

Weekly Radiation Levels, Pilgrim Nuclear Power Station, Plymouth, MA



ATTACHMENT B

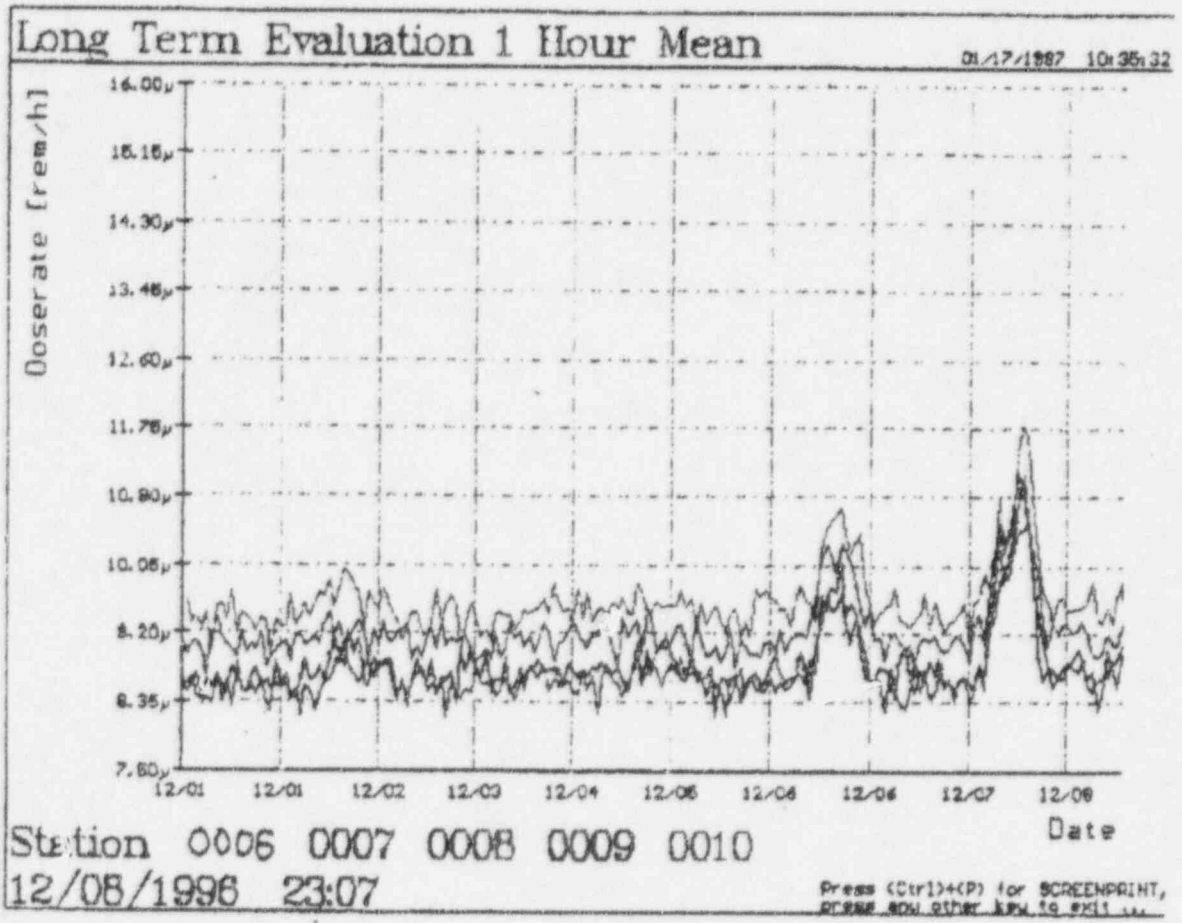
RING MONITORS 11, 12, 13 & 14
RADIATION LEVELS FROM 120196 THROUGH 120896



ATTACHMENT B

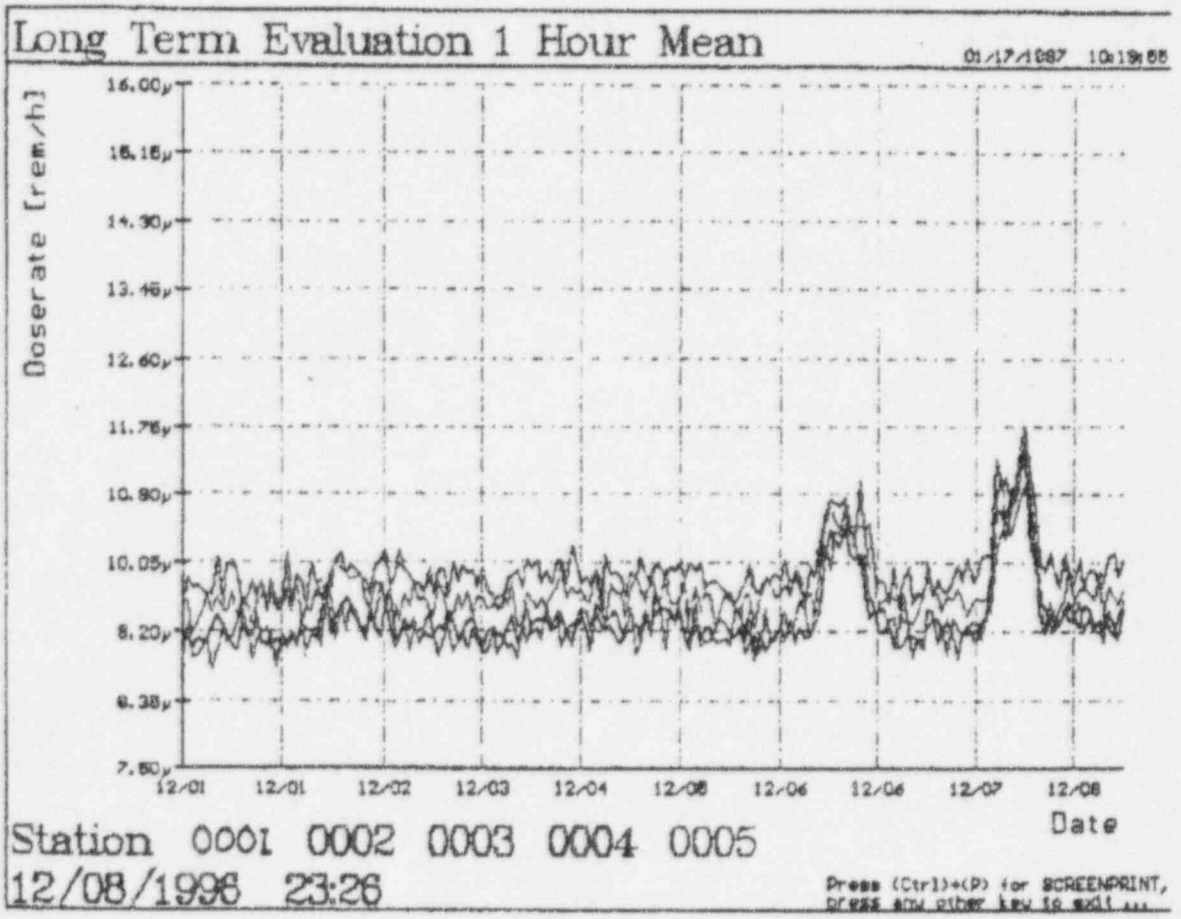
RING MONITORS 6, 7, 8, 9 & 10

RADIATION LEVELS FROM 120196 THROUGH 120896

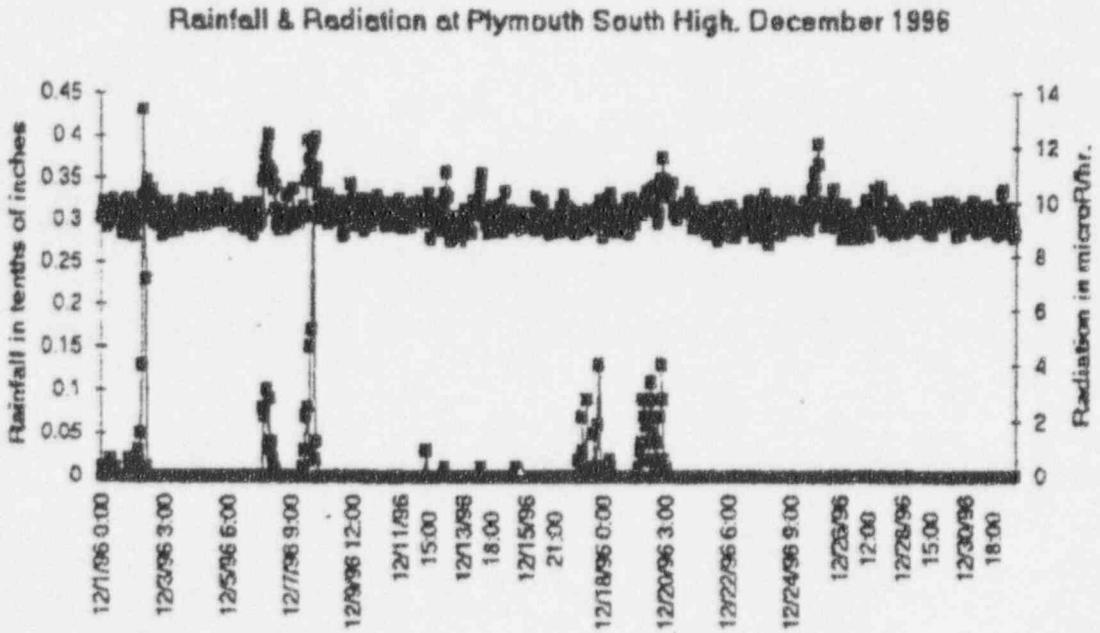


ATTACHMENT B

RING MONITORS 1, 2, 3, 4 & 5
RADIATION LEVELS FROM 120196 THROUGH 120896



ATTACHMENT C



ATTACHMENT C

Chart2

Rainfall & Radiation at Plymouth Community Intermediate School,
December 1996