

November 8, 2010

David A. Lochbaum
Director, Nuclear Safety Project
PO Box 15316
Chattanooga, TN 37415

Dear Mr. Lochbaum:

I am responding to your letter dated October 15, 2010, in which you made reference to an article that appeared in *The Patriot-Ledger*, of Quincy, Mass., on October 13, 2010. In that article Mr. Neil Sheehan, of our Public Affairs staff, described NRC's current assessment of Entergy's efforts to determine the source of tritiated water sampled from an on-site groundwater monitoring well at Pilgrim Nuclear Power Station. The well has exhibited varied concentrations of tritium ranging from about 1,800 to 25,000 pCi/l since it was first sampled in July 2010.

In cooperation with the NRC, the Massachusetts Department of Public Health, the Massachusetts Emergency Management Agency, and the Massachusetts Department of Environmental Protection have been closely following Entergy's investigation efforts since July 2010, and have conducted on-site reviews and independent assessments and analyses. Both the NRC and the State of Massachusetts have reviewed Entergy's efforts, including tests, examinations, and analyses of various systems, to determine the source of the tritium. The NRC has confirmed that Entergy continues to be actively engaged in investigating the nature and source of this on-site groundwater contamination. Based on information reviewed to date, the NRC has determined that public health and safety has not been affected by this on-site condition, and plant-related radioactivity has not been detected in any off-site sampling location.

In response to a question relative to potential sources of the tritiated water, Mr. Sheehan indicated that several theories were being explored by the licensee, including precipitation of condensed moisture from normal gaseous releases. These tritium-containing releases could collect on surfaces, such as roofs, and subsequently be washed out through roof drains by rain. Mr. Sheehan indicated that this was one possible explanation being explored by the licensee for the source of tritiated water. Mr. Sheehan was in no way indicating that this was the NRC's or the licensee's conclusion as to the source or cause. He was only indicating that this was one of several potential scenarios being evaluated for its plausibility.

Entergy routinely monitors 18 on-site groundwater monitoring wells and several off-site environmental monitoring locations at Pilgrim. Additionally, the licensee recently conducted sampling and analysis of rain water collected from various roof drains to explore the theory that rain may be washing deposited activity, such as tritium, from building roof surfaces into storm drains and catch basins. Entergy determined that the data, to date, does not support that theory. However, given that they have not completed their analysis, this potential cause has not yet been completely eliminated. The licensee is continuing efforts to collect hydrological data, analyze information from groundwater monitoring wells and environmental samples, and

conduct further testing and analysis to determine the cause and resolve this condition. The NRC continues to independently review the licensee's efforts to determine the source of the tritium detected in the groundwater monitoring well.

Although Entergy's current assessment and the NRC's independent assessment is that "tritium precipitation" may not be the source of the tritium contamination at Pilgrim, tritium deposition due to gaseous releases from nuclear facilities (sometimes referred to as "rainout" or "washout") has long been recognized as a potential source of tritiated water and is well documented in various technical literature. I have enclosed some on-line links for your information, many of which I am sure you have already reviewed. Additionally, the NRC has discussed some aspects of this matter in Regulatory Issue Summary 2008-03, "Return/Re-Use of Previously Discharged Radioactive Effluents," which can be found in ADAMS at accession number ML072120368.

I appreciate your interest in this matter and hope this information is helpful.

Sincerely,

/RA/

William M. Dean
Regional Administrator
Region I

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On-Line References Regarding Tritium Releases from Nuclear Power Plants

The Significance of Tritium Releases to the Environment

<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=04326482>

The Distribution of Radioactive (3H, 14C) and Stable (2H, 18O) Isotopes in Precipitation, Surface and Groundwaters of NW Yugoslavia

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VB2-5167DY7-2&_user=5250395&_coverDate=10%2F08%2F2010&_rdoc=1&_fmt=high&_orig=search&_origi=n=search&_sort=d&_docanchor=&_view=c&_searchStrId=1519487699&_rerunOrigin=google&_acct=C000066197&_version=1&_urlVersion=0&_userid=5250395&md5=546a7c03a4a859891e54154e78a45737&searchtype=a

TAM-E.3 08:45 Tritium Recapture Due to Rain and Snow at a Nuclear Power Plant

<http://hpschapters.org/2010AM/program/singlesession.php3?sessid=TAM-E>

Monitoring of atmospheric 3H around Kakrapar Atomic Power Station

<http://www.springerlink.com/content/n6v1874441731136/>

Public Health Goals for Chemicals in Drinking Water - Tritium

<http://oehha.ca.gov/water/phg/pdf/phgtritium030306.pdf>

Tritium in the Atmospheric Environment

<http://wwwsoc.nii.ac.jp/jnrs/paper/JN82/jn8217.pdf>

Report and Advice on the Ontario Drinking Water Quality Standard for Tritium

http://www.odwac.gov.on.ca/standards_review/tritium/tritium.htm

Tritium Recapture Behavior At A Nuclear Power Reactor Due To Airborne Releases

<http://journals.lww.com/health-physics/pages/articleviewer.aspx?year=2008&issue=08000&article=00003&type=abstract>