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Docket No. 50-320

Dr. Warren K. Sinclair, President
National Council on Radiation
Protection and Measurements (NCRP)
7910 Woodmont Avenue
Bethesda, Maryland 20014

Sept 8, 1980

Dear Dr. Sinclair:

By your letter of July 15, 1980, we are pleased to learn of the acceptance of the National Council on Radiation Protection and Measurements (NCRP) of our invitation to undertake a study of the health and safety consequences associated with the disposition of decontaminated TMI-2 accident generated waste water. We understand that the study will be conducted by a special task group, known as the "Task Group on the Disposal of Accident Generated Waste Water," of NCRP's Scientific Committee 38 on waste disposal and will address the issue of disposal of accident generated waste water generically with special reference to the situation at Three Mile Island Unit 2. If the Task Group members (including the group chairman) have been selected, we would appreciate receiving the member listing and respective telephone numbers and addresses so that we can forward any information they believe is necessary to conduct the study. Additionally, we would like to be apprised of your proposed schedule for completion of the task group study so that we can provide supporting information on a timely basis.

In your letter, you requested that we transmit the source term for potential radiological effluents to the environment and related technical information. The NRC staff recently published (August 14) its Draft Programmatic Environmental Impact Statement (PEIS) Related to Decontamination and Disposal of Radioactive Wastes Resulting from March 28, 1979 Accident, Three Mile Island Nuclear Station, Unit 2 and we are transmitting 10 copies for your use in initiating the NCRP study. The PEIS describes the alternatives for processing accident generated waste water (i.e., reactor building sump water, reactor coolant system water, and water collected in auxiliary building tanks) as well as the alternatives for ultimate disposition of the processed water and the corresponding environmental impacts.

The source term will consist of processed water from the waste water inventories located in the auxiliary building tanks, the reactor coolant system, and the reactor building sump. The licensee recently completed processing (through EPICOR-II) the initial inventory of intermediate-level waste water contained in the auxiliary building tanks. The processed water, consisting of approximately 500,000 gallons, is being stored on site in various tanks and contains the estimated radionuclide distribution listed in the attached Table 1.

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The waste water in the reactor building sump, consisting of approximately 650,000 gallons, has not yet been processed. However, for the purpose of your study, the processed sump water may be assumed to have the radionuclide distribution listed in Table 2. The method of processing the sump water will not be determined until the final PEIS is issued and the best alternative is approved by the NRC.

The waste water in the reactor coolant system (RCS), consisting of approximately 96,000 gallons, has not yet been processed and its disposition will be subject to the issuance of the final PEIS and approval of the best alternative by the NRC. However, for the purposes of your study, the processed RCS water may be assumed to contain the radionuclide distribution listed in Table 3. As noted in Tables 1, 2, and 3, the dominant radionuclide in processed water is tritium. The source term will be updated as more recent information becomes available. Of all the alternatives for disposal of processed water (e.g., see PEIS subsection 5.2.2.2), the three with the greatest potential for impacting the population in the TMI vicinity include release to the Susquehanna River (liquid pathway), release to the air via forced evaporation (gaseous pathway), and release to the air via natural evaporation from a pond (gaseous pathway). The latter two pathways are different because of the slower rate (ci/yr) of discharge of tritium to the environment for the natural evaporation alternative. In this regard, it should be noted that there exist two liquid waste basins on site with a combined surface area of approximately 60,000 ft² and capacity of 2.5 x 10⁶ gal.

We trust that the information provided in this letter is sufficient for the NCRP Task Group to initiate the study. Should you have any questions or require additional information, please contact Dr. Bernard J. Snyder, Director, Three Mile Island Program Office, at 492-7347.

Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Draft PEIS (NUREG-0683)
- 2. Tables 1,2 and 3

*NOTE: SEE PREVIOUS YELLOW FOR CONCURRENCE

OFFICE ▶	TMIPO	DIR/TMPO	D:DIR/NRR	DIR/NRR		
SURNAME ▶	*Rweller/hmt	*BJSnyder	EGCase	HRDenton		
DATE ▶	8/29/80	8/29/80	9/ /80	9/ /80		

TABLE 1

Radionuclide Distribution of Auxiliary Building Water*
Processed by EPICOR-II

Radionuclide	Concentration of Processed Water ($\mu\text{Ci/ml}$)**
H-3	0.19
Cs-137	4.2×10^{-6}
Cs-134	5.6×10^{-6}
Sr-90	6.7×10^{-8}
Sr-89	1.6×10^{-8}

* Volume of processed water is 500,000 gallons

** Concentrations as of August 1, 1980

TABLE 2

Expected Radionuclide Distribution
of Processed Reactor Building Sump Water*

Radionuclide	Concentration of Processed Water ($\mu\text{Ci/ml}$)**
H-3	1.0
Co-60	5.0×10^{-5}
Sr-89	1.1×10^{-5}
Sr-90	4.8×10^{-5}
Nb-95	1.0×10^{-5}
Ru-103	1.5×10^{-6}
Ru-106	1.4×10^{-4}
Sb-125	1.9×10^{-2}
Cs-134	3.0×10^{-6}
Cs-137	1.8×10^{-5}
Ce-144	6.4×10^{-5}

* Volume of processed water is 650,000 gallons

** Concentrations as of August 1, 1980

TABLE 3

Expected Radionuclide Distribution
of Processed Reactor Coolant System Water*

Radionuclide	Concentration of Processed Water ($\mu\text{Ci/ml}$)**
H-3	8.0×10^{-2}
Co-58	2.0×10^{-5}
Sr-89	5.0×10^{-5}
Sr-90	4.8×10^{-4}
Zr-95	5.0×10^{-5}
Nb-95	8.0×10^{-5}
Ru-106	1.0×10^{-2}
Sb-125	4.0×10^{-4}
Te-125m	6.0×10^{-4}
Te-127m	3.0×10^{-2}
Te-129m	1.0×10^{-4}
Cs-134	5.7×10^{-7}
Cs-137	3.9×10^{-6}
Ce-144	3.0×10^{-3}

* Volume of processed water is 96,000 gallons

** Concentrations as of August 1, 1980

NCRP

*National Council on Radiation Protection
and Measurements*

7910 WOODMONT AVENUE, SUITE 1016, WASHINGTON, D. C. 20014 AREA CODE (301) 657-2652

WARREN K. SINCLAIR, *President*
HYMER L. FRIEDEL, M.D., *Vice President*
W. ROGER NEY, *Executive Director*

July 15, 1980

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

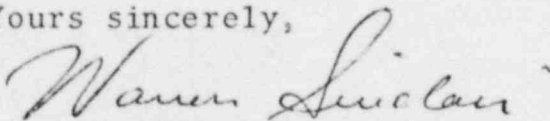
Thank you for your letter of July 1 in which the National Council on Radiation Protection and Measurements is formally requested by the Nuclear Regulatory Commission to undertake a study of the health and safety consequences associated with the disposition of decontaminated TMI-2 accident generated waste water.

The NCRP will be pleased to address this matter from the generic point of view with special reference to the TMI-2 situation. We plan to set up a special task group of NCRP's Scientific Committee 38 on waste disposal. The Task Group will be known as the Task Group on the Disposal of Accident Generated Waste Water.

We are already in the process of setting up the Task Group and would appreciate in the meantime receiving details of the source term and other related technical information that you may have available.

We shall also keep in touch on the matter of schedules, etc.

Yours sincerely,



Warren K. Sinclair
President

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