6024

RELATED CORRESPONDENCE

DOCKETED
USNRC

April 4, 1988

'88 APR -7 A9:58

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION, ET AL. | ) | Docket No. 50-320 OLA |
| | ) | ASLBP No. 87-554-OLA |
| (Three Mile Island Nuclear Station, Unit 2) | ) | (Disposal of Accident-Generated Water) |

NRC STAFF RESPONSE TO
SUPPLEMENTAL INTERROGATORIES FROM TMIA/SVA

## I. INTRODUCTION

The NRC staff (Staff) hereby responds to supplemental interrogatories filed by TMIA/SVA on March 15, 1988.

## II. RESPONSES TO INTERROGATORIES

Supplemental Interrogatory 1

In Section 3.2, EIS Supplement #2, P.3.18, you state that bulk shipment of the AGW to NTS is "one feasible method". According to your statement, shipment is permitted provided certain criteria are met. It is written in a foot-note that the concentration of specified radioisotopes should not exceed 1% of the total radioactivity. You concluded that "the percentage of the specified radioisotopes is less than .0006%". Since neither the Sample Analysis of 1/11/88 nor Table 2.2 of the EIS Supplement #2 reflect that many of the specified radioisotopes were looked for, please explain how you reached your conclusion that the specified radioisotopes is less than .0006%. Below is a list of those specified radioisotopes which are not listed in either Table 2.2 or Sample Analysis of 1/11/88:

Actinium-227
Americium-242
Californium-249, -250, -252
Curium-243, -244, -245, -246
Neptunium-237
Protactinium-231
Plutonium-242
Thorium-228, -230
Uranium-232



DS07

RESPONSE

The conclusion that specified radioisotopes would be less than .0006% of the total radioactivity (Suppl. No. 2, p. 3.18 footnote (a)) was based on the concentrations and detection limits listed in Table 2.2. The activity of actinium-227, americium-242, californium-249, -250 and -252, curium-243, -244, -245 and -246, neptunium-237, protactinum-231, plutonium-242, thorium-228 and -230 and uranium-232 was assumed to be zero in this calculation. (Linda F. Munson).

Supplemental Interrogatory 2

With regard to your statement "some of the references listed . . . have been reviewed" in Response to Interrogatory 11, please state exactly which articles were reviewed, their title, Journal and date. Can you make these articles available to Joint Intervenors? If not, please state their contents and findings.

RESPONSE

In addition to reviewing the abstracts that we provided with our response to the last interrogatories we obtained and reviewed complete articles for abstracts number 104016281 and 0014318114. Copies are attached. The first article is a review of available information in 1985. (Munson).

Supplemental Interrogatory 3

When calculating dose to the individual and the population, do you include the dose from internal radioactive emitters?

RESPONSE

As explained in Section 7.2.18 and elsewhere in Final Supplement 2, the calculated doses include the radiation dose from internally deposited radionuclides. They include not only all of the dose that would be

received during evaporation of the water but all of the dose that would be received from whatever amount of radionuclide would remain in the body after that evaporation ceased (for a total of 50 years). (Munson).

Supplemental Interrogatory 4

In response to Interrogatory 12 you stated that "With the exception of tritium, the physical and chemical form of the radionuclides has not been determined." When do you expect to determine the physical and chemical form of the other radionuclides? If you do not expect to determine the physical and chemical form, state your reasons for not doing so.

RESPONSE

We do not expect to determine the physical and chemical form of the other radionuclides. The environmental impact is related to the radiation dose, which was calculated using conservative assumptions regarding the chemical and physical form of the non-tritium radionuclides. These assumptions deal with the solubility of the radionuclides in biological systems. (Munson).

Supplemental Interrogatory 5

What are the similarities and differences between the evaporator to be used at TMI, Unit 2 and those studied for the reports detailed in NUREG documents 1992 and 0017?

RESPONSE

NUREG/CR-1992, In-Plant Source Term Measurements at Four PWR's describes measurements taken on AMF evaporators at Turkey Point and Rancho Seco reactors. Although evaporators at Fort Calhoun and Zion were apparently also examined for the study they were not described. The evaporator described in the reference and the evaporator described in GPU's February 16, 1988 letter to the Commission are similar in that

they are vacuum evaporators with horizontal heating tubes of a similar total surface area (635 ft.$^2$ for the AMF evaporator compared to 520 ft.$^2$ for the GPU plan.) They are different in that the AMF evaporator is heated by low pressure steam while the GPU proposed evaporator uses hot water formed by compressing the steam formed in the evaporator. The sources of energy to the GPU evaporator are steam formed by electrically heating water in the auxiliary evaporator (primarily during evaporator start up) and mechanical energy supplied to the vapor compresser. Also, based on the descriptions and drawings, the GPU evaporator may have a much more extensive moisture separation system to prevent carryover.

NUREG-0017, Rev. 1, Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors provides the basis for evaporator release fraction used in developing a computer code. The basis consists of a series of six references, one of which is a generic review in the nuclear industry. No design information is provided in this document for any of the evaporator installations. It is therefore not possible to compare these evaporators to the TMI evaporator without additional research. (Munson).

Supplemental Interrogatory 6

Regarding the document relating to the RESL sample in response to Interrogatory 7 g, it is noted that a sample was sent to the Laboratory on 7/25/87 and 7/21/87 and that this latter sample replaced the former sample. Explain why Iodine 129 and Tritium were analysed from the second sample and not the first. Explain why a second sample was drawn. Explain the method of procurement of this sample, who drew the sample, and state when the tank contents had been recirculated and for how long.

RESPONSE

As noted in Staff's response to TMI/SVA Interrogatories 1 and 2, dated February 22, 1988, and in memoranda dated July 21, 1987, and January 11, 1988, from D. J. Collins to W. D. Travers, only one sample of accident-generated water (AGW) was drawn for analysis by NRC's contractor, the Radiological and Environmental Sciences Laboratory (RESL). The sample was drawn on February 24, 1987, and the sampling procedure is described in Staff's response to TMIA/SVA Interrogatory 2. Although the sample was separated for convenience into several portions, all of the previously reported results, including Iodine 129 and tritium, were obtained through analysis of the same sample. (William D. Travers).

Supplemental Interrogatory 7

Are you aware of any technology which can remove tritium from water? If the answer is "yes" state briefly what that technology is.

RESPONSE

Yes. Sections 3.6.12 and 3.6.13 of Final Supplement 2 to the PEIS describes two methods of removing tritium from water. (Michael T. Masnik).

Respectfully submitted,

Colleen P. Woodhead
Counsel for NRC Staff

Dated at Rockville, Maryland
this 4th day of April, 1988