



HITACHI

GE Hitachi Nuclear Energy

GEH Morris Operation
7555 East Collins Rd
Morris, IL 60450

M220031

February 22, 2022

ATTN: Document Control Desk
Director, Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Regional Administrator
U.S. Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Ste 210
Lisle, IL 60532-4352

Subject: 2021 GEH Morris Operation Annual Effluent Report

References: 1) NRC License SNM-2500, Docket 72-01
2) NRC Regulation 10CFR72.44

Dear Sir or Madam,

In accordance with 10CFR72.44(d)(3) and SNM-2500 license condition 8.2.1, this report documents an estimate of quantities of principal radionuclides released to the environment by the GE-Hitachi Morris Operation in 2021. This report also provides an estimate of the maximum potential dose to the public resulting from GE-Hitachi Morris Operation effluents for 2021.

Particulate and gaseous radionuclides above minimum detectable levels were used in calculations. Particulates present on the stack monitor filters were Sr-89, Sr-90, Cm-242, Np-237, and Cs-137. Gaseous radionuclides evaluated were H-3 and Kr-85. The quantity of tritium released was calculated by multiplying basin water evaporative losses, by the average tritium levels in the fuel basins. The amount of Kr-85 released was calculated by multiplying the concentration found in samples taken directly over the basin water, by the airflow through the basin area.

COMPLY V1.7.1 (the EPA software program) was used to calculate the Committed Effective Dose Equivalent from the release of principle radionuclides. The quantities released and the estimated dose to the public is shown in the following table:

Nuclide	Activity Discharged (Ci/Yr)
Sr-89	3.439E-7
Sr-90	2.267E-7
Cm-242	6.401E-7
Np-237	6.896E-7
Cs-137	1.667E-7
H-3	7.622E-3
Kr-85	1.182E-0

Committed Effective Dose Equivalent: **1.7 E-6 mRem/year**

There are no liquid effluents from the site. Surface and groundwater water tritium levels were below minimum detectable levels and are conservatively reported as the minimum detectable level.

The maximum potential Committed Effective Dose Equivalent to the public that could occur from surface water was calculated to be **7.3 E-3 mRem** - based on a person consuming water all year from the Sanitary Lagoons (MDA of 160 pCi/l H-3).

The maximum potential Committed Effective Dose Equivalent to the public that could occur from groundwater was calculated to be **7.4 E-3 mRem** - based on a person consuming water all year from any of the following wells: DM-1, 2, 3, 4, 5, 6, 7, and 8 (MDA of 162.5 pCi/l H-3).

Measurement of direct radiation at the GE-Hitachi Morris Operation owner control boundary is accomplished using TLDs prepared and processed by a NVLAP certified laboratory using direct measurement techniques. The calculated maximum potential Deep Dose Equivalent to the public that could occur from direct radiation at the boundary of the owner-controlled area was calculated to be **0.104 mRem** assuming the maximum time spent at the boundary is 24 hours per year.

The maximum potential radiation dose to the public, for 2021, would result from the sum of the stack effluent releases, the dose from drinking surface water from the Sanitary Lagoons, ground water from monitoring wells DM-1, 2, 3, 4, 5, 6, 7, and 8, and from direct radiation at the owner-controlled boundary. The maximum potential Total Effective Dose Equivalent (TEDE) to the public estimated from these sources for 2021 is **0.12 mRem**.

Sincerely,


Anthony E. McFadden
Plant Manager

Commitments: None

Cc: K. Banovac, USNRC DFM
M. Kunowski, USNRC RIII
PM 22-003