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August 12, 1983
5211-83-235

Office of Nuclear Reactor Regulation
Attn: J. F. Stolz, Chief
Operating Reactor Branch #4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
TMI-1 Steam Generator Repair Status Update

This letter is to confirm information given to members of your staff in telephone conversations on August 10, 1983 on our plans for leakage monitoring during the precritical non-nuclear steam generator hot functional test program. Because of the long outage and resultant low fission product inventory in the primary coolant, conventional monitoring of radioactivity in the secondary system will not be sufficiently sensitive to detect leakage rates of 6 gph on a continuous basis. Boron, tritium and fission product inventories in the secondary can provide meaningful data only after considering trending through long periods of steady state operation. Adding a gaseous tracer such as hydrogen, helium or nitrogen in detectable quantities would not permit use of the reactor coolant pumps.

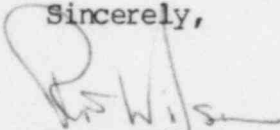
GPUN has concluded that sufficient sensitivity during continuous test monitoring is best achieved by the use of a very small quantity of a gaseous radioactive tracer in the reactor coolant system. We plan to add approximately 20 curies of Kr-85 to the primary system, to bring the concentration in the coolant to approximately 4.5×10^{-2} uCi/cc. Use of this quantity of tracer is expected to provide a continuous monitoring capability of leak rates as low as 0.2 gph. The environmental impact of the tracer is minimal. Even if all the tracer were released instantaneously to the environment through the off-gas system, an event which is not physically possible, exposure of an individual at the site boundary would be limited to 6.8×10^{-3} mrem whole body, assuming adverse meteorological conditions. Actual offsite doses are projected to be much less. For example, for a 6 gph leak, assuming average meteorological conditions, exposure rates at the site boundary are projected to be 2.0×10^{-8} mrem/hr whole body.

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In our letter of July 18, 1983 discussing our no significant hazards considerations evaluation for hot testing, we listed the isotopes present in the reactor coolant and projected a maximum exposure rate at the site boundary for a 500 gpm primary-to-secondary leak under adverse meteorological conditions. We would like to amend the isotope list to include the tracer, and to modify the off site dose projection. For a 500 gpm leak of reactor coolant containing the tracer, a maximum of 2.3×10^{-3} mrem/hr whole body would be expected at the site boundary. GPUN has concluded that these changes do not affect our earlier conclusion that the use of the repaired steam generators for hot functional testing involves no significant hazards considerations.

Sincerely,



R. F. Wilson
Vice President -
Technical Functions

/mt

cc: J. Van Vliet
H. Silver