VERMONT YANKEE NUCLEAR POWER CORPORATION

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REPLY TO:
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B.3.2.1

WVY 80-134

September 23, 1980

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Office of Nuclear Reactor Regulation
Mr. T. A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) Letter, VYNPC to USNRC dated March 17, 1980
(c) Letter, USNRC to VYNPC dated July 30, 1980
(d) Letter, VYNPC to USNRC dated August 13, 1980
(e) Letter, H. R. Denton to R. L. Smith dated February 21, 1980

Subject: Supplementary Information in Support of Vermont Yankee Proposed Change No. 79, RPT/Analog Trip System

Dear Sir:

Reference (d) provided additional information regarding Vermont Yankee Proposed Change No. 79, RPT/Analog Trip System as requested by the NRC in Reference (c). After reviewing Reference (d), your staff has requested additional information regarding the environmental qualification of the equipment to be installed by this change. Specifically, your staff asked that we supply information detailing the qualifications of the subject equipment for radiation exposure and thermal aging. They stated that this information, together with the postulated radiation and thermal environment in which this equipment would be required to function, as well as a description of the method used to calculate the radiation dose seen by it, would provide a basis for their evaluation of the adequacy of the environmental qualification. This information is supplied in the attachments to this letter. Documentation certifying the qualification of this equipment will be available at the plant site for NRC inspection. As we have stated in discussions with your staff, the normal temperature this equipment will be exposed to is less than 90°F. The Vermont Yankee FSAR states that the maximum post-accident temperature in the reactor building is 150°F which was the basis for the specification of this equipment. Analyses are underway to determine the exact post-accident temperature profiles in the reactor building, but these analyses will not be complete for several weeks. In any event, we believe that the current FSAR analysis is bounding for this installation.

Once again we must point out the fact that, in Reference (e), the Commission ordered Vermont Yankee to install a recirculation pump trip by December 31, 1980. Our proposed change for this modification, Reference (b), was submitted March 17, 1980 to allow ample time for Commission review and approval. The information supplied by this letter was requested to address requirements imposed by the Commission's Memorandum and Order of May 27, 1980, which was issued over two months after our proposed change was submitted.

To enable Vermont Yankee to comply with the Commission's Confirmatory Order, Reference (e), the subject proposed change must be approved in time to allow installation during the upcoming refueling outage scheduled to begin September 26, 1980.

We trust that the information supplied in this letter will be sufficient to enable your staff to complete their review in the existing time frame. If you have any further questions, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

R. L. Smith
Licensing Engineer

Attachment

Attachment A

Equipment Qualification for Radiation Exposure and Temperature

Equipment	Maximum Temperature	Maximum Radiation Dose
Rosemount Transmitters	200°F	5×10^6 Rads
Rosemount Trip Units	156°F	1.9×10^5 Rads
Agastat Relays	156°F	2×10^5 Rads
Elma Power Supply	156°F	1.9×10^5 Rads
Batteries	160°F	1.26×10^8 Rads
Distribution Panel	150°F	1×10^5 Rads
Battery Charger	150°F	5×10^4 Rads

NOTE: The limiting piece of equipment for both temperature and radiation exposure is the battery charger; however, if the charger failed during an accident, the batteries are sized to power the necessary equipment for the time period it is required to be operable.

Attachment B

Method of Radiation Dose Calculation

Source Description	Shielding	Geometry
Airborn Dose		
Source: 100% Noble Gases in Fuel 25% Halogens in Fuel Primary Cont. Leak Rate: 0.8%/day Assumptions: No Hydrogen Purge Isotopic Decay Occurs No Plateout Occurs	None	Base of finite hemispherical cloud
Recirculating Fluid Dose		
Source: (Same as NUREG-0588) 100% Noble Gases in Fuel 50% Halogens in Fuel 1% of Fission Products in Fuel	1 Meter of Concrete	4" Pipe, 2 meters long
Background - Normal Operating Dose Over 40 years Source: As measured, area is frequently occupied	Not Applicable	Not Applicable

For the time period that this equipment must be operable during the postulated accident,

Airborn Dose + Recirculating Fluid Dose + Background (40 years) = Accident Dose

Accident Dose = 9.0×10^3 Rads ($\gamma + \beta$)