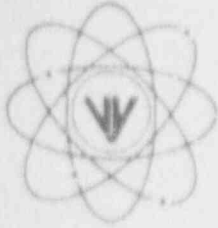


VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, V 05301-7002

REPLY TO
ENGINEERING OFFICE
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BOSTON, MA 02140
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January 17, 1992
BVY 92-003

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

- References
- (a) License No. DPR-28 (Docket No. 50-271)
 - (b) Letter, USNRC to VYNPC, NVC 91-134, dated November 14, 1991, Plant Specific Resolution Of Alternate Rod Injection Issue (TAC No. 82055)
 - (c) Letter, VYNPC to USNRC, BVY 91-29, Subject: Implementation of Alternate Rod Injection System (ARI) Diversity Requirements In 10 CFR 50.62 (ATWS Rule) at Vermont Yankee, dated March 20, 1991
 - (d) Letter, USNRC to Mr. L. A. Tremblay, NVC 91-01, Subject: Implementation Of Alternate Rod Injection System (ARI) Diversity Requirements In 10 CFR 50.62 (ATWS Rule) At Vermont Yankee Nuclear Power Station (TAC NO. 59155), dated 1/11/91
 - (e) Letter, USNRC to Mr. John J. Barton (GPU Nuclear Corporation, Oyster Creek Nuclear Generating Station), Subject: Exemption From Specific Technical Requirements Of 10 CFR 50.62(c)(3) - TAC NO. 80877, dated 9/26/91
 - (f) Letter, GPU Nuclear Corporation to USNRC, C321-91-2111, dated 6/28/91

Subject: Exemption Request for Alternate Rod Injection (ARI) Diversity Per 10 CFR 50.62 (ATWS Rule) at Vermont Yankee Nuclear Power Station

Dear Sir:

The purpose of this letter is to request an exemption from the diversity requirements of 10 CFR 50.62(c)(3) for the Alternate Rod Injection (ARI) System at Vermont Yankee Nuclear Power Station. Vermont yankee makes this request pursuant to the provisions of 10 CFR 50.12(a)(2)(iii).

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Background

The ATWS rule (10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients Without SCRAM (ATWS) Events for Light-Water-Cooled Nuclear Power Plants") required, among other things, the installation of an Alternate Rod Injection (ARI) System. The ARI System is to be diverse from the reactor trip system sensor output to the final actuation device. The Staff's position is that this should be interpreted to mean different manufacturers. Reference (c) transmitted to the NRC Vermont Yankee's plans regarding compliance with the staff's position concerning diversity between the Reactor Trip and ARI Systems. Vermont Yankee's intention was to diversify level measurement instrumentation only, since Vermont Yankee believes that the availability of the high neutron flux SCRAM provides the required diversity for the ARI high reactor pressure initiation signal. The NRC responded to Reference (c) per Reference (d) which reiterated the staff's position that the trip units in the ARI System should be diverse from the trip units in the Reactor Protection System for both reactor water level and reactor pressure measurements. The NRC letter also stated that; "the licensee should modify their design to comply with the rule or request an exemption." The NRC letter (Reference (b)) further stated that; "Under the provisions of 10 CFR 50.12, the licensee may request a specific exemption if they can demonstrate that compliance would result in undue hardship or other costs that are significantly in excess of those incurred by others similarly situated." Based upon the above and the subsequent knowledge that another utility with a similar situation to that of Vermont Yankee has received a NRC-approved exemption from ARI diversity requirements as detailed in References (e) & (f), Vermont Yankee has decided to request an exemption from these subject diversity requirements. The bases for our request for exemption are provided below.

Bases For Exemption

At Vermont Yankee, ARI input signals for both reactor vessel level and pressure use ECCS instrument loops and are classified as safety class. These ECCS loops use Rosemount transmitters and trip card files. These trip card files are located in the Reactor Building which is subject to harsh environmental conditions. This is different than most of the other plants which presently do not comply with the Staff's position and which also have Rosemount trip cards in both their RTS and ARI Systems. Trip card files for most of these other plants are located in mild environments, allowing them to use an essentially one-for-one replacement unit manufactured by General Electric (GE). Trip cards manufactured by GE, unlike Rosemount trip cards, are not qualified to Vermont Yankee's harsh environment, making it necessary for Vermont Yankee to identify an alternative to satisfy ARI diversity requirements.

Several options are available to Vermont Yankee in order to comply with the Staff's position concerning ARI System diversity requirements. One option would be to install new non-nuclear safety Rosemount transmitters and trip card files which are manufactured by someone other than Rosemount as the ATWS Rule does not require the ARI System to be safety related. However, this would result in an overall reduction in the ARI System reliability since the present Vermont Yankee ARI System utilizes all safety related instrumentation. In addition, Rosemount trip card files similar to those presently utilized in the ARI System have functioned admirably at Vermont Yankee for over 10 years. Replacement of safety related equipment which has had an excellent operating history with non-safety related and possibly with unproven operational history will reduce the overall reliability of the ARI System. Another option would be to continue to use existing ECCS transmitters. However, this option would require breaking into the safety class ECCS instrument loops and the installation of isolation devices between the safety class ECCS loops and the non-safety ARI system. In addition, new non-Rosemount trip card files would have to be purchased and installed in the control room. This could have a negative impact on ECCS reliability due to the addition of more components in the ECCS loops. Due to the potential degradation on the ECCS loops, Vermont Yankee does not consider this a viable option at this time. A final option would be to install new dedicated safety related transmitters and safety related non-Rosemount trip card files and relays in order to maintain the current safety related status of the Vermont Yankee ARI System. This would be the preferred option from a reliability aspect.

Any of the options described above would result in a significant plant modification and in undue hardship and costs significantly in excess of those incurred by others similarly situated, i.e., other BWR plants which are required to implement ARI diversity. As stated above, Rosemount trip card files used in the ARI System at Vermont Yankee are located in an area subject to a harsh environment such that a one-for-one replacement with GE trip cards is not possible. Since most other plants have Rosemount trip card files located in mild environments, they can easily implement the one-for-one option of replacing Rosemount trip cards with GE trip cards. Replacing the Rosemount units with the GE units is estimated to cost approximately \$170K/plant, as noted in Reference (d). The cost to be incurred by Vermont Yankee is estimated to be approximately \$435,000. This estimate is based upon the addition of new dedicated safety related transmitters, trip cards and relays. Transmitters would be seismically installed in the reactor building and trip cards and relays located and seismically installed in the control room. The cost of this option is not significantly different than the option to install non-nuclear safety instrumentation because the installation and engineering and design costs are similar. However, the option of adding safety related instrumentation has the advantage of improved reliability.

Additionally, Reference (f) points out that the BWR Owners' Group (BWROG) recently performed an assessment of the Automatic Trip Unit (ATU), which is the logic component subject to the functional diversity requirement. The BWROG's assessment concluded that "Analog Transmitter Trip Unit (ATTU) failure is a negligible contributor to overall shutdown failure frequency, because of the total number of failures required to prevent automatic shutdown, low common cause failure potential, the availability of diverse level indications and alarms from feedwater control, and the adequate procedural guidance and time available for operator action if automatic action fails." (See BWROG-8962, dated August 11, 1989 to Mr. James Taylor (NRC) from Stephen D. Floyd, Chairman BWR Owner's Group).

Conclusion

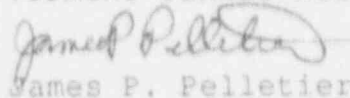
Based upon the special circumstances detailed above and pursuant to the provisions of 10 CFR 50.12(a)(2)(iii), Vermont Yankee requests an exemption from the requirements of 10 CFR 50.62(c)(3) related to the diversity requirements for the ARI System. Compliance with the staff's position would result in undue hardship on Vermont Yankee due to costs and manhour expenditures which are significantly in excess of those which would be incurred by others similarly situated. In addition, the BWROG's quantitative assessment of the scram system's reliability showed the increased costs of providing diverse manufactured trip units was not justified by the insignificant improvement in overall safety.

The present Vermont Yankee design and installation of the ARI System satisfies the intent and underlying purpose of the ATWS rule.

We trust that our request is deemed acceptable and would appreciate your expeditious decision in this matter; however, if you should have any questions, please contact us.

Very truly yours,

Vermont Yankee Nuclear Power Corporation



James P. Pelletier
Vice President - Engineering

cc: USNRC Region I Administrator
USNRC Resident Inspector - VYNPS
USNRC Project Manager - VYNPS