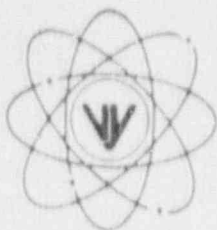


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BVY 91-02

REPLY TO
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Proposed Change 162

January 15, 1991

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

- References:
- (a) License No. DPR-28 (Docket No. 50-271)
 - (b) NUREG 0737, "TMI Action Plan," Item III.D.3.4
 - (c) Clarification to NUREG 0737, TMI Action Plan, Item III.D.3.4
 - (d) Letter, FVY 81-8, R.L. Smith (VYNPS) to D.G. Eisenhut (NRC), "Submittal of Information on NUREG 0737, Item III.D.3.4, Control Room Habitability," dated January 12, 1981
 - (e) Letter, NVY 80-22, D.B. Vassallo (NRC) to R.L. Smith (VYNPS), dated February 24, 1982
 - (f) Regulation Guide 1.78, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release," June 1974
 - (g) NUREG-75/087, "Standard Review Plan"
 - (h) "Technical Guidance for Hazard Analysis, Emergency Planning for Extremely Hazardous Substances," U.S. Environmental Protection Agency, Federal Emergency Management Agency, U.S. Department of Transportation, December 1987
 - (i) "Pocket Guide to Chemical Hazards," National Institute of Occupational Safety and Health, September 1985

Dear Sir:

Subject: Proposed Change No. 162, Toxic Gas Monitoring System

Pursuant to Section 50.90 of the Commission's Rules and Regulations, Vermont Yankee hereby proposes the following changes to Appendix A of the Operating License.

Proposed Change

This proposed change eliminates the Technical Specification requirements for the Toxic Gas Monitoring System (TGMS). Revised Pages 34a, 49c, 60b, and 66 are provided in Attachment 1 to this submittal.

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It is Vermont Yankee's intention that the TGMS, and the Bottled Gas Pressurization System (BGPS), will be completely deactivated and removed from service, and all references removed from associated documents following approval of this proposed change. In the case of the TGMS, all detectors and associated automatic protective actions will be disconnected. It should be noted that removal of the TGMS will eliminate the automatic initiation of the control room HVAC System into the Recirculation Mode. However, the ability for Control Room operators to manually place the HVAC System into the Recirculation Mode will remain.

Reason for Change

The TGMS was installed to meet the Control Room habitability requirements of NUREG 0737, Item III.D.3.4 [Reference (b)] for a postulated off-site toxic chemical release. The TGMS samples Control Room HVAC intake air for five toxic gases and causes Control Room isolation dampers to close and the Bottled Gas Pressurization System to initiate when gas concentrations reach predetermined setpoints. These automatic actions are designed to provide Control Room operators with at least two minutes to don breathing apparatus before the Control Room air reaches toxic limits.

Since its installation, the TGMS has been an operational burden. The relatively frequent (several per operating cycle) occurrence of trouble alarms and spurious trips are a distraction to Control Room operators and reduce the effectiveness for the system in an actual emergency. These operational difficulties stem from the fact that the system requires use of sensitive instruments and very low actuation setpoints. Vermont Yankee has spent and continues to spend considerable resources on calibration, preventive maintenance, and corrective maintenance efforts to address these inherent difficulties.

Vermont Yankee believes that the TGMS only improves Control Room habitability for certain very low probability events. We believe that this benefit is outweighed by the distractions and stresses that the system imposes on Control Room operators and by the costs of maintaining the system. Thus, Vermont Yankee submits this proposed Technical Specification change and justification for removal of the TGMS.

Basis for Change

The basis for the Toxic Gas Monitoring System is NUREG 0737, Item III.D.3.4, "Control Room Habitability." [Reference (b) and (c)]. Vermont Yankee's original submittal on this Item Reference (d) showed that the provisions of NUREG 0737, Item III.D.3.4 relating to Control Room habitability following a radiological release or an on-site chemical release were satisfied without the need for a TGMS (no TGMS existed at that time). The NRC SER for this Item [Reference (e)] concluded that the criteria of NUREG 0737, Item III.D.3.4 would be satisfied upon completion of modifications for a detection system which addresses potential off-site chemical releases. Thus, the basis for the TGMS is the "off-site" release portion of NUREG 0737, Item III.D.3.4.

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In its original approach to this item, Vermont Yankee provided the TGMS as an automatic detection/isolation system in order to satisfy the deterministic criteria of Regulatory Guide 1.78 Reference (f). NUREG 0737, Item III.D.3.4 Reference (c) makes reference to Regulatory Guide 1.78 as a source of guidance for performing such evaluations. However, NUREG 0737, Item III.D.3.4 Reference (c) also makes reference to Standard Review Plan (SRP), Section 2.2.3 Reference (g) as a source of guidance for such evaluations. SRP Section 2.2.3 establishes probabilistic guidelines for identifying design basis events. According to SRP Section 2.2.3, events which exceed these probabilistic guidelines must then be addressed using the deterministic methods of Regulatory Guide 1.78.

For this proposed change, Vermont Yankee uses the deterministic criteria of Regulatory Guide 1.78 as screening criteria. For events which exceed these screening criteria, the probabilistic criteria of SRP Section 2.2.3 are applied. Application of these regulatory criteria with the guidance provided by NUREG 0737, Item III.D.3.4 Reference (c).

Attachment 2, "Analysis to Support Removal of the Vermont Yankee Toxic Gas Monitoring System," documents Vermont Yankee's analysis with respect to these regulatory criteria. The analysis is updated from the Reference (d) analysis with regard to the chemicals currently shipped, the chemicals considered potentially toxic and the corresponding toxicity limits. The results show that all chemicals satisfy the Regulatory Guide 1.78 screening criteria, with the exception of chlorine. For chlorine, the report shows that the frequency of an event leading to Control Room uninhabitability and subsequent fission product release is below the SRP Section 2.2.3 threshold for consideration as a design basis event. Thus, the TGMS is not required to satisfy the provisions of NUREG 0737, Item III.D.3.4.

Safety Evaluation

The safety analyses presented in Attachment 2 include both deterministic and probabilistic analyses. The deterministic analyses follow the general guidelines of Regulatory Guide 1.78. Regulatory Guide 1.78 guidance includes the following:

- a. A list of "some hazardous chemicals."
- b. A "toxicity limit" for each chemical.
- c. Consideration of chemicals shipped within a five-mile radius of plant.
- d. Consideration of chemicals shipped more frequently than 10 times per year by truck and 30 times per year by rail.
- e. Methodology for calculating diffusion of a puff release.

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The deterministic analyses presented in Attachment 2 follow the Regulatory Guide 1.78 methodology, with the exception of the list of chemicals and the toxicity limits. A much more comprehensive list of chemicals, the EPA's list of Extremely Hazardous Substances (EHS), Reference (h), was used in this study, along with the Regulatory Guide 1.78 list, in order to identify potentially toxic chemicals. The toxicity limits were based on the National Institute of Occupational Safety and Health (NIOSH) concentrations for "Immediately Dangerous to Life and Health" (IDLH) Reference (i). These values are generally higher than the Regulatory Guide 1.78 values, although the limited list of chemicals in Regulatory Guide 1.78 does not provide toxicity limits for all chemicals considered in the analysis. The IDLH values are considered to be consistent with the Regulatory Guide 1.78 time frame of a two-minute exposure. Thus, Vermont Yankee considers the deterministic analysis presented in the attached report to be a comprehensive analysis which is consistent with the general guidance and intent of Regulatory Guide 1.78. The analysis results show that all chemicals except chlorine meet the deterministic screening criteria of either,

1. Toxic limits are not reached in the Control Room, or
2. A two-minute interval exists between the time a toxic chemical is detectable by smell and the time the toxicity limit is reached.

For chlorine, the report presents a probabilistic analysis of the frequency of a core damage event resulting from an off-site chlorine release. The analysis accounts for the transportation accident frequency, the effects of meteorology on plume dispersion, and on the plant response. The results show that the estimated frequency of such an event leading to core damage is orders of magnitude less than the SRP Section 2.2.3 guideline of $1E-7$ to $1E-6$ per year. Thus, this event is below the threshold for consideration as a design basis event.

The results of this safety analysis demonstrate that the NUREG 0737, Item III.D.3.4 requirements for Control Room habitability following an off-site toxic chemical release can be met without the need for a TGMS.

This proposed change has been reviewed by the Vermont Yankee Plant Operations Review Committee and the Vermont Yankee Safety and Audit Review Committee.

Significant Hazards Consideration

The standards used to arrive at a determination that a request for amendment involves no significant hazards consideration are included in the Commission's regulations (10CFR50.92) which state that the operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. In addition, the Commission has provided guidance in the practical application of these criteria in 51FR7751, dated March 6, 1986.

The discussion below addresses each of these three criteria and demonstrates that the proposed amendment involves no significant hazards considerations.

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1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated. The only previously evaluated accidents affected by this change are off-site toxic chemical releases. These events have been re-evaluated for this proposed change and have been shown to meet the applicable regulatory criteria. The probabilistic analysis done in support of this proposed change shows that the probability of an off-site chlorine release leading to 10CFR100 consequences is in orders of magnitude less than the SRP Section 2.2.3 guidelines. The deterministic analyses performed show that the deterministic guidelines of Regulatory Guide 1.78 for Control Room Habitability are met for all other chemicals. These results show that there is no significant increase in the probability or consequences of any accident previously evaluated.
2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. Only events involving chemicals for which the TGMS provides an automatic detection/isolation function are affected by this change. As stated above, the potential events involving these chemicals have been re-evaluated using appropriate regulatory guidance and shown either to satisfy the deterministic screening guidelines of Regulatory Guide 1.78, or to be probabilistically insignificant compared to the guidelines of SRP Section 2.2.3. These results show that this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.
3. The proposed amendment will not involve a significant reduction in a margin of safety. The margin of safety is defined by the regulatory basis for the existing TGMS, namely NUREG 0737, Item III.D.3.4. The analysis provided to support this proposed change follows the regulatory guidelines of Regulatory Guide 1.78 and SRP Section 2.2.3, as specified in NUREG 0737, Item III.D.3.4. This analysis shows that the applicable regulatory criteria are met, hence this proposed change does not reduce a margin of safety.

Based on the above, we have determined that this change does not constitute a significant hazards consideration as defined in 10CFR50.92(c).

Schedule of Change

The revised pages will be incorporated into the Technical Specifications as soon as possible following receipt of NRC approval.

