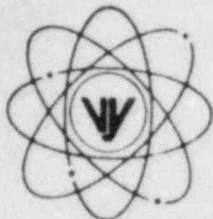


VERMONT YANKEE NUCLEAR POWER CORPORATION



RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

REPLY TO:
ENGINEERING OFFICE
1671 WORCESTER ROAD
FRAMINGHAM, MASSACHUSETTS 01701
TELEPHONE 617-872-8100

January 25, 1985
FVY 85-08

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Mr. Thomas T. Martin, Director
Division of Engineering and Technical Programs

References:

- a) License No. DPR-28 (Docket No. 50-271)
- b) Letter, USNRC to All Licensees of Operating Plants, dated 10/31/80
- c) Letter, VYNPC to USNRC, WVY 80-170, dated 12/15/80
- d) Letter, VYNPC to USNRC to FVY 82-1, dated 1/5/82
- e) Letter, VYNPC to USNRC, FVY 82-61, dated 5/27/82
- f) Letter, USNRC to VYNPC, NVY 83-48, dated 3/18/83
- g) Letter, USNRC to VYNPC, NVY 84-193, dated 8/17/84
- h) Letter, VYNPC to USNRC, FVY 84-114, dated 9/24/84
- i) Letter, USNRC to VYNPC, NVY 84-254, dated 12/11/84
- j) Letter, VYNPC to USNRC, FVY 85-1, dated 1/9/85
- k) Letter, USNRC to All Licensees of Operating Plants, dated 10/30/79

Subject: Installation of Vermont Yankee Containment High Range Radiation Monitors (NUREG-0737, Item II.F.1-3)

Dear Sir:

We have been notified by your office [References g) and i)] that the containment high range radiation monitoring channels installed at Vermont Yankee are not considered by the Office of Nuclear Reactor Regulation, Radiological Assessment Branch, to meet the requirements cited in NUREG-0737 (Item II.F.1-3).

In subsequent conversations with NRC staff, we were informed that the NRR's position concerning the installation of the channels is that the detectors were not widely separated in accordance with the requirements of NUREG-0737, Item II.F.1-3. In our letter dated January 9, 1985 [Reference j)], we notified you of our intention to provide documentation of, and justification for, our position that the detectors installed at Vermont Yankee meet the requirements of NUREG-0737, Item II.F.1-3 [Reference b)]. The purpose of this letter is to provide that documentation and justification for our position (see Attachment 1), and to request your evaluation of our detector installation.

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VERMONT YANKEE NUCLEAR POWER CORPORATION

In summary, Vermont Yankee's position is as follows:

In November of 1980, Vermont Yankee installed two physically separated containment high range radiation monitors to meet the requirements of Section 2.1.8.b of NUREG 0578. In accordance with the clarifications provided in the NRC's letter to All Licensees of Operating Plants [Reference k)], Table 2.1.8.6.3, these monitors are installed to be physically separated and such that they "must not provide misleading information to the operator assuming delayed core damage...." Additionally, the monitor channels are independent, powered by instrument and vital power, and have been designed and installed to meet seismic and environmental qualification requirements.

The detector locations were selected to specifically ensure that a large segment of the drywell was being monitored, that the detectors were not adversely impacted by radioactive material contained within piping of the reactor coolant pressure boundary nor shielded from viewing the drywell volume by sizable piping or structural members, and that the monitors viewed the same representative large fraction of the drywell thus ensuring confidence in the readings.

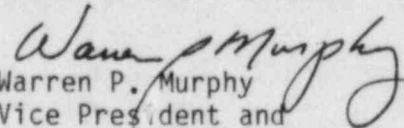
As presently installed, the containment high range monitors would provide a reasonable assessment of area radiation inside containment in the event of a significant violation of the Reactor Coolant System pressure boundary. The range of monitors is adequate to follow radiation levels from 1 R/hr to 10^7 R/hr (gamma) which is the maximum expected in an accident where the release from the fuel is equivalent to 100% of the core inventory of noble gases, 50% of the halogens and 1% of other isotopes. As recommended, thick shielding was not used to increase the range of the detectors.

On the basis of Vermont Yankee's early and responsive installation of these instruments to meet the requirements of NUREG 0578, and our evaluation that the as-installed monitors meet the requirements specified by NUREG 0737, as summarized in Attachment 1, we believe our existing installation to be in full compliance with "The Order Confirming Licensee Commitments on Post-TMI-Related Issues," dated March 14, 1983 [Reference f)], and respectfully request the Vermont Yankee installation be approved.

We trust this information will be satisfactory; however, should you have any questions or desire additional information, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION


Warren P. Murphy
Vice President and
Manager of Operations

ATTACHMENT 1
TO
VYNPC TO USNRC LETTER
DATED JANUARY 25, 1985

In November of 1980, Vermont Yankee installed two physically separated containment high range radiation monitors to meet the requirements of Section 2.1.8.b of NUREG 0578. In accordance with the clarifications provided in the NRC's letter to All Licensees of Operating Plants [Reference k)], Table 2.1.8.6.3, these monitors are installed to be physically separated and such that they "must not provide misleading information to the operator assuming delayed core damage...." Additionally, the monitor channels are independent, powered by normal and vital power, and have been designed and installed to meet seismic and environmental qualification requirements.

The detector locations were selected to specifically ensure that a large segment of the drywell was being monitored, that the detectors were not adversely impacted by radioactive material contained within piping of the reactor coolant pressure boundary nor shielded from viewing the drywell volume by sizable piping or structural members, and that the monitors viewed the same representative large fraction of the drywell thus ensuring confidence in the readings.

The adequacy of these as-installed monitors was reviewed against the requirements specified in NUREG 0737 [Reference b)], Table II.F.1-3. This resulted in Vermont Yankee's certification which became the basis for the Commission's Confirmatory Order [References e) and f), respectively]. Subsequently, we have been informed by Region I that, in the staff's opinion, our installation of containment high range radiation monitors did not adequately address "widely separated." It is Vermont Yankee's position that the existing containment high range radiation monitor locations are as widely separated as possible, consistent with the other criteria and objectives specified in NUREG 0737 [Reference b)], Attachment 3 (II.F.1) and Table II.F.1-3 for the installation.

Clarification 3 to Attachment 3 (II.F.1) of NUREG 0737 [Reference b)] provides specific guidance for locating the containment high range radiation monitors. Specifically, it provides five goals and one recommendation:

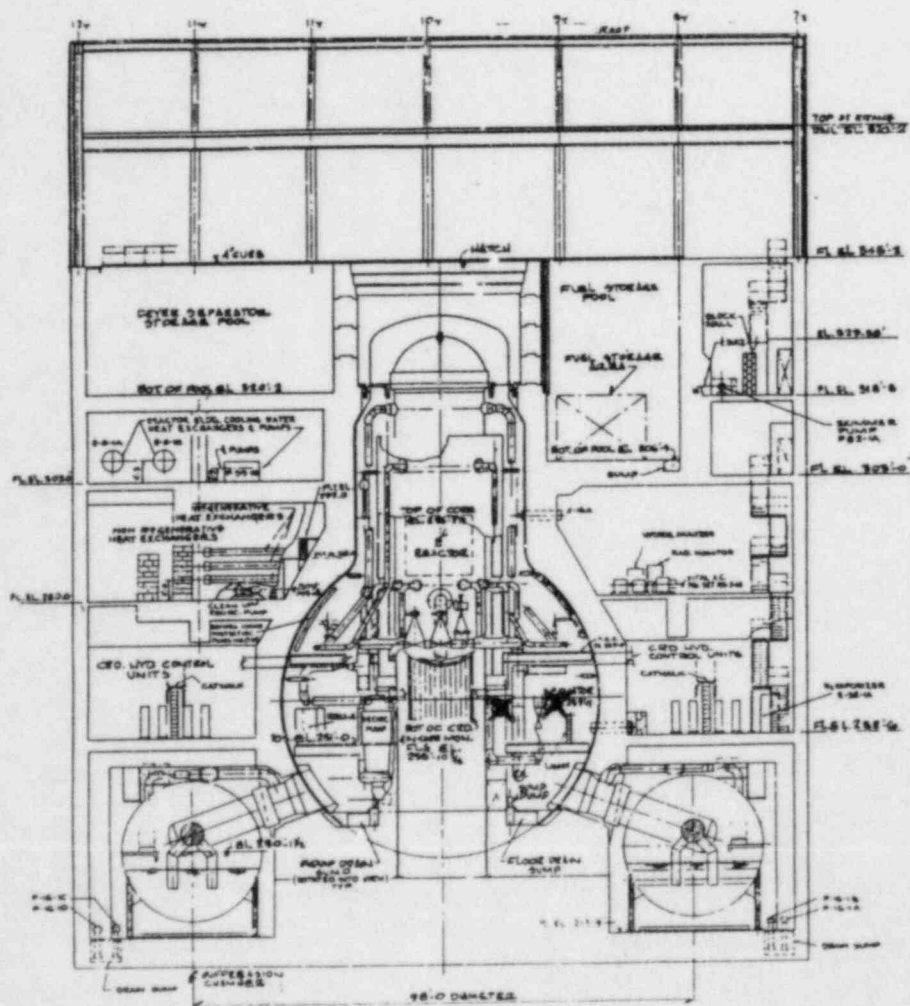
- 1) The monitors shall be located in containment(s) in a manner as to provide a reasonable assessment of area radiation conditions inside containment.
- 2) The monitors shall be widely separated so as to provide independent measures.
- 3) The monitors shall "view" a large fraction of the containment volume.

- 4) Monitors should not be placed in areas which are protected by massive shielding.
- 5) The monitors should be reasonably accessible for replacement, maintenance or calibration.
- 6) Placement high in a reactor building dome is not recommended because of potential maintenance difficulties.

Using this guidance, Vermont Yankee selected locations for these monitors which were close to the midplane of the drywell's spherical section to maximize the containment volume viewed by the detector (Goal 3). This location permits each detector to view essentially the same volume of containment, and thus produce unambiguous readout of actual containment conditions (Goal 1). Unlike the containment of a PWR, the drywell of a BWR is a relatively small location, with a high degree of congestion from piping and structural members. The chosen locations neither adversely shield the monitors from the main volume of containment, nor do they place the detectors too close to the reactor coolant pressure boundary where variable readings due to contained high source term fluids may be expected to be present post-accident (Goals 1 and 4). Additionally, the locations selected are readily accessible for replacement, maintenance, and/or calibration (Goal 5); and the location is not in the dome (Recommendation 6).

Therefore, Vermont Yankee concluded that the selected locations, as shown on the marked-up FSAR Figures 12.2-2 and 12.2-7, attached, are as widely separated as is reasonably achievable (Goal 2) without compromising other specified goals. Movement of the existing monitor locations would not provide any more accuracy than the existing locations, would tend to produce data with varying absolute values post-accident which would make assessment more difficult, and would result, unnecessarily, in additional operational radiation exposure to plant personnel associated with maintenance activities.

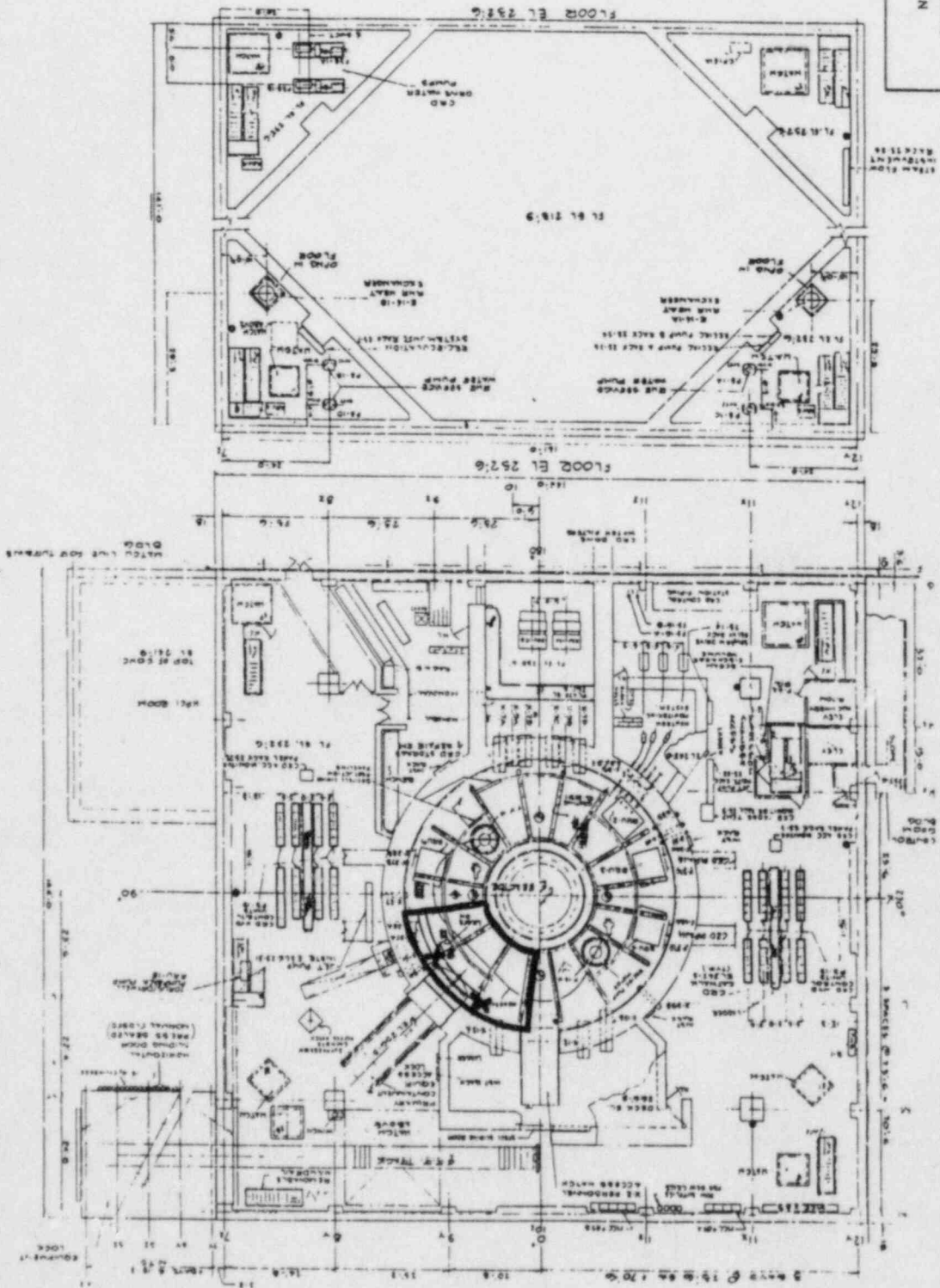
Given that Vermont Yankee installed these monitors in 1980, in good faith to the criteria of NUREG 0578, and that the existing monitor locations subjectively meet the intent and criteria promulgated by NUREG 0737, absent any mandatory definition of the extent necessary to be "widely separated," and that the detriments associated with alternate locations far outweigh any marginal benefits, Vermont Yankee believes the existing containment high range radiation monitors meet all requirements of NUREG 0737 and the NRC's Confirmatory Order [Reference b)].



X - CONTAINMENT HIGH RANGE MONITOR LOCATIONS

<p>VERMONT YANKEE NUCLEAR POWER STATION FINAL SAFETY ANALYSIS REPORT</p>
<p>REACTOR BUILDING SECTION A-A FIGURE 12.2-7</p>

X - CONTAINMENT HIGH RANGE MONITOR LOCATIONS



VERMONT YANKEE
 NUCLEAR POWER STATION
 FINAL SAFETY ANALYSIS REPORT

REACTOR BUILDING
 PLAN EL. 252'-6
 FIGURE 12.2-2