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TECHNICAL EVALUATION REPORT

CONFORMANCE TO REGULATORY GUIDE 1.97:
VERMONT YANKEE

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EG&G Idaho

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PREFACE

This report is supplied as part of the "Program for Evaluating Licensee/Applicant Conformance to RG 1.97," being conducted for the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of Systems Technology, by EG&G Idaho, Inc., Regulatory and Technical Assistance Unit.

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CONFORMANCE TO REGULATORY GUIDE 1.97: VERMONT YANKEE

1. INTRODUCTION

On December 17, 1982, Generic Letter No. 82-33 (Reference 1) was issued by D. G. Eisenhut, Director of the Division of Licensing, Nuclear Reactor Regulation, to all licensees of operating reactors, applicants for operating licenses, and holders of construction permits. This letter included additional clarification regarding Regulatory Guide 1.97, Revision 2 (Reference 2), relating to the requirements for emergency response capability. These requirements have been published as Supplement No. 1 to NUREG-0737, "TMI Action Plan Requirements" (Reference 3).

The Vermont Yankee Nuclear Power Corporation, licensee for the Vermont Yankee Station, provided a response to Section 6.2 of the generic letter on October 30, 1984 (Reference 4). This submittal addresses Revision 3 of Regulatory Guide 1.97 (Reference 5). The licensee submitted additional information and commitments on October 25, 1985 (Reference 6), August 11, 1987 (Reference 7), July 28, 1988 (Reference 8), and September 1, 1989 (Reference 9).

This report, based on the recommendations of Regulatory Guide 1.97, Revision 3, compares the instrumentation provided and proposed by the licensee's submittals with these recommendations.

2. REVIEW REQUIREMENTS

Section 6.2 of NUREG-0737, Supplement No. 1, sets forth the documentation to be submitted in a report to the NRC describing how the licensee complies with Regulatory Guide 1.97 as applied to emergency response facilities. The documentation should provide the following information for each variable shown in the applicable table of Regulatory Guide 1.97.

1. instrument range

2. environmental qualification

3. seismic qualification

4. quality assurance

5. redundance and sensor location

6. power supply

7. location of display

8. schedule of installation or upgrade

The submittals should identify any deviations taken from the regulatory guide recommendations and provide supporting justification or alternatives for the deviations identified.

Subsequent to issuing the generic letter, the NRC held regional meetings, in February and March 1983, to answer licensee and applicant questions and concerns regarding the NRC policy on this subject. At these meetings, it was noted that the NRC review would address only exceptions taken to Regulatory Guide 1.97. It was also noted that when licensees or applicants explicitly state that instrument systems conform to the

regulatory guide, no further staff review would be necessary. Therefore, this report addresses only those exceptions to Regulatory Guide 1.97 that have been identified by the licensee. The following evaluation is an audit of the licensee's submittals based on the review policy described in the NRC regional meetings.

3. EVALUATION

The licensee provided responses to Item 6.2 of NRC Generic Letter 82-33, on October 30, 1984, October 25, 1985, August 11, 1987, July 28, 1988, and September 1, 1989. The responses describe the licensee's position on post-accident monitoring instrumentation. This evaluation compares the instrumentation provided by the licensee to the recommendations of Revision 3 of Regulatory Guide 1.97.

3.1 Adherence to Regulatory Guide 1.97

The licensee provided a review of their post-accident monitoring instrumentation that compares the instrumentation characteristics against the recommendations of Regulatory Guide 1.97, Revision 3 (Reference 4). The licensee's review has three sections (a) instrumentation that meets the regulatory guide, (b) instrumentation that will be modified to meet the regulatory guide, and (c) instrumentation that the licensee determined appropriate for Vermont Yankee. The licensee scheduled all identified modification for Cycle 13 or Cycle 14 startup (1987 and 1989). Therefore, we conclude that the licensee provided an explicit commitment on conformance to the Regulatory Guide 1.97. Exceptions to and deviations from the regulatory guide are noted in Section 3.3.

3.2 Type A Variables

Regulatory Guide 1.97 does not specifically identify Type A variables, i.e., those variables that provide the information required to permit the control room operator to take specific, manually-controlled safety actions. The licensee classifies the following instrumentation as Type A.

1. reactor pressure

2. reactor vessel level

3. drywell pressure

4. drywell temperature

5. torus pressure

6. torus water temperature

7. torus water level

8. torus airspace temperature

These variables, with exceptions as noted in Section 3.3, either meet or will be upgraded to meet the Category 1 recommendations, consistent with the requirements for Type A variables.

3.3 Exceptions to Regulatory Guide 1.97

The licensee identified deviations and exceptions to Regulatory Guide 1.97. The following paragraphs discuss these deviations and exceptions.

3.3.1 Neutron Flux

Regulatory Guide 1.97 recommends Category 1 instrumentation for this variable with a range from 10^{-6} to 100 percent of full power. The licensee states that they verify a scram using only the linear power range monitors (LPRM). They state that indication of one percent power will verify a successful scram. The licensee has committed to qualify the LPRMs to Category 1 requirements, including environmental qualification and power source recommendations. The licensee also states that once a control rod shutdown has occurred, inadvertent reactivity addition is not possible. The licensee notes that regulatory requirements do not consider a coincident anticipated transient without scram (ATWS) with a design basis accident. As the intermediate range monitors and the source range monitors do not encounter a harsh environment with an ATWS, the licensee considers the

modified neutron flux instrumentation acceptable for Regulatory Guide 1.97 and 10 CFR 50.49. While a flux reading of one percent can verify a scram, it will not detect an inadvertent reactivity addition with sufficient time to mitigate the problem. An inadvertent reactivity addition is possible from sources other than inadvertent boron dilution. Neutron flux instrumentation should be able to detect any return to reactivity after an accident is thought to be under control.

Regulatory Guide 1.97 recommends Category 1 neutron flux monitoring instrumentation to monitor reactivity control during post-accident situations. The regulatory guide specifies neutron flux as the key variable for determining the accomplishment of reactivity control. It is a key variable because it is a direct measurement, not an indirect or lagging indication. The regulatory guide specifically states that Category 1 instrumentation should meet the environmental qualification requirements of 10 CFR 50.49. 10 CFR 50.49 explicitly references Regulatory Guide 1.97, requiring the environmental qualification of all Category 1 instrumentation. Initiating and post-reactor shutdown events could involve environmental conditions that are more extreme than the conditions considered for the existing neutron flux instrumentation. Neutron flux instrumentation supplied for monitoring post-accident conditions must, according to the regulatory guide, be capable of monitoring down to 10^{-6} percent of full reactor power. This instrumentation must satisfactorily operate in these extreme environmental conditions. The instrumentation (detectors) must be reliably in place immediately after initial shutdown. The instrumentation should be fully operable for an extended period, i.e., in the order of sixty days, following an accident.

The licensee based the use of neutron flux instrumentation on anticipated conditions resulting from standard design basis analysis conditions. These events are normally considered reasonably comprehensive. However, the instrumentation recommendations of Regulatory Guide 1.97 intends to cover a wider range of possibilities, including conditions not necessarily anticipated following standard event analyses defined event paths. The intent of the 10^{-6} percent lower limit of the recommended range was to provide, with maximum forewarning time, operator information

(via evaluations of deviations from normal post-shutdown flux levels) and warning of possible post-event approaches or a return to a critical state. This might be under circumstances that would involve reactor states and evolving events and conditions not anticipated from analyses following normally considered event scenarios. It would thus be virtually impossible to either predict or demonstrate the implausibility of such event paths and resulting conditions.

We conclude that the licensee's position does not address the conceptual basis that set the recommendations of Regulatory Guide 1.97. The expected flux levels exist for some extended period after rapid shutdown from power operation. These expected flux levels set the required power level that this instrumentation must measure. For the reactivity status to be verifiable, neutron source and intermediate range level detectors must be operational following this rapid shutdown from power operation. The normal, non-power flux levels serve as a base for observable deviations of reactivity states in the anomalous and undefined events indicated above.

10 CFR 50.49 requires environmental qualification for Category 1 and Category 2 post-accident monitoring equipment. Therefore, based on the above, we conclude that the Category 1 designation is appropriate. We also conclude that the licensee should environmentally qualify the neutron flux monitoring equipment to comply with 10 CFR 50.49.

Industry has developed and made available at least two different wide range neutron flux monitoring systems that satisfy the Category 1 criteria of Regulatory Guide 1.97. Based on our review, we conclude that the existing instrumentation is acceptable for interim operation. The licensee should evaluate these newly developed systems and install neutron flux monitoring instrumentation that fully complies with the Category 1 and range criteria of Regulatory Guide 1.97.

3.3.2 Drywell Sump Level
Drywell Drains Sump Level

Regulatory Guide 1.97 recommends Category 1 instrumentation for these variables. The licensee has supplied Category 3 instrumentation for the sump leakage flow rate instead of sump level. The sump pump running time and the time between pump starts determines the leakage rate. Level switches start and stop the sump pumps. The drywell sump systems automatically isolate at the primary containment penetration if an accident signal occurs.

We find that sump level detection is a method of determining leakage from the reactor coolant system specified in Regulatory Guide 1.45. The licensee measures the leakage through the sump drain. We conclude that the instrumentation supplied by the licensee will provide the appropriate monitoring of the parameter of concern. We base this conclusion on the following.

1. For small leaks, the instrumentation will not experience a harsh environment during operation and will show response to the leak.

2. For larger leaks, the sumps fill promptly and the sump drain lines isolate due to the increase in drywell pressure, thus negating the drywell sump level and drywell drains sump level instrumentation.

3. This instrumentation neither automatically starts nor alerts the operator to start operation of a safety-related system in a post-accident situation.

Therefore, we find the provided Category 3 instrumentation acceptable.

3.3.3 Radiation Level in Circulating Primary Coolant

RR-17-252 provides this indication in the control room. However, the detector has no environmental qualification as recommended by the regulatory guide. The licensee indicates that additional radiation level measurements to indicate fuel cladding failure are provided by the following instrumentation

1. main steamline radiation monitors

2. drywell high-range radiation monitors

3. post-accident sampling system.

The post-accident sampling system was reviewed and approved by the NRC as part of their review of NUREG-0737, Item II.B.3. Based on the alternate instrumentation provided by the licensee, we conclude that the instrumentation supplied for this variable is adequate and, therefore, acceptable.

3.3.4 Drywell Atmosphere Temperature

Regulatory Guide 1.97 recommends instrumentation with a range from 40°F to 440°F for this variable. The licensee states that their analysis shows the drywell temperature will not exceed 350°F under any postulated conditions. The licensee expanded the range of the instrumentation to comply with this analysis.

Based on the analyzed temperature not exceeding 350°F, we find the zero to 350°F range acceptable.

3.3.5 Reactor Core Isolation Cooling Flow
High Pressure Coolant Injection Flow

Regulatory Guide 1.97 recommends environmentally qualified instrumentation for these variables. The licensee indicates that this instrumentation does not experience a harsh environment during a small break LOCA. The operators use these systems when responding to a small break LOCA.

The environmental qualification rule, 10 CFR 50.49, clarifies this requirement. It is concluded that the guidance of Regulatory Guide 1.97 has been superseded by a regulatory requirement. The licensee included this instrumentation in the scope of their environmental qualification program. The instrumentation is in a mild environment. Because the licensee included this instrumentation in their 10 CFR 50.49 review, we find the provided instrumentation acceptable.

3.3.6 Core Spray System Flow

Regulatory Guide 1.97 recommends environmentally qualified instrumentation for this variable. The licensee ascertains the emergency core cooling system (ECCS) performance by using the reactor vessel level and pressure, drywell temperature and pressure, ECCS and core spray valve position, and ECCS pump and core spray pump motor current. Based on using the above as key instrumentation for the variable, the licensee uses Category 3 flow instrumentation as backup instrumentation for the core spray system. The licensee states that this instrumentation is in the scope of their environmental qualification program. Because the licensee has included this instrumentation in their 10 CFR 50.49 review, we find the provided instrumentation acceptable.

3.3.7 Standby Liquid Control System (SLCS) Flow

The licensee has elected to implement this variable using zero to 2000 psig pump discharge pressure instrumentation rather than zero to 110 percent

of design flow as recommended in Regulatory Guide 1.97. The operator can also verify system operation by monitoring the decrease in the SLCS storage tank level.

The licensee uses a positive displacement pump for the SLCS. Thus, high output pressure would indicate flow blockage and low or erratic pressure would indicate a line break. We find the above indications a valid alternative indication of SLCS operation.

3.3.8 RHR Heat Exchanger Outlet Temperature

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable. The regulatory guide recommends a range from 40°F to 350°F. Category 2 criteria include environmental qualification. The instrumentation supplied has a range of zero to 300°F. Environmental qualification is not provided. The licensee states that the RHR water originates in the torus. As the torus water temperature does not exceed 300°F, and the RHR heat exchanger outlet temperature will be less than this, we find the zero to 300°F range acceptable.

The licensee states that the key variables for observing the RHR system performance are the torus water temperature, drywell pressure, and reactor pressure. The licensee uses the RHR heat exchanger outlet temperature instrumentation as backup instrumentation.

The environmental qualification rule, 10 CFR 50.49, clarifies this requirement. It is concluded that the guidance of Regulatory Guide 1.97 has been superseded by a regulatory requirement. The licensee included this instrumentation in the scope of their environmental qualification program. The licensee uses this instrumentation as a backup variable under that program. Because the licensee included this instrumentation in their 10 CFR 50.49 review, we find the provided instrumentation acceptable.

3.3.9 Cooling Water Temperature to ESF System Components

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable with a range of 40°F to 200°F. Category 2 criteria include environmental qualification. The instrumentation supplied has a range of zero to 150°F. This instrumentation has no environmental qualification. The licensee does not address the range deviation. The licensee says additional qualification is not necessary because they measure the RHR heat exchanger performance by using other variables (torus water temperature, drywell pressure, and reactor pressure).

The licensee should justify the range of zero to 150°F.

The environmental qualification rule, 10 CFR 50.49, clarifies the requirement. It is concluded that the guidance of Regulatory Guide 1.97 has been superseded by a regulatory requirement. The licensee included this instrumentation in the scope of the environmental qualification program. The licensee uses this instrumentation as a backup variable under that program. Because the licensee included this instrumentation in the 10 CFR 50.49 review, we find the provided instrumentation acceptable.

3.3.10 Cooling Water Flow to ESF System Components

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable with a range of zero to 110 percent of design flow. Category 2 criteria include environmental qualification. The RHR service water flow transmitters, FT 10-97A and FT 10-97B, have no environmental qualification. The licensee ascertains the ECCS performance by using the reactor vessel level and pressure, drywell temperature and pressure, ECCS valve position, and ECCS pump motor current. Based on using the above as key instrumentation for this variable, the licensee uses the RHR service water flow as backup instrumentation.

The licensee states that this instrumentation is in the scope of their environmental qualification program. Because the licensee included this instrumentation in their 10 CFR 50.49 review, we find the provided instrumentation acceptable.

3.3.11 Secondary Containment Area Radiation
Radiation Exposure Rate

Regulatory Guide 1.97 recommends instrumentation for these variables with a range from 10^{-1} R/hour to 10^{4} R/hour The licensee is installing additional instrumentation. They state that the range provided will assure on-scale monitoring. We find this commitment acceptable.

The regulatory guide recommends Category 2 instrumentation for the secondary containment area radiation instrumentation. The licensee concludes that Category 3 instrumentation is suitable because any decision on area habitability would not be necessary till at least three months post-accident. Essential equipment is environmentally qualified to operate for a year. Additionally, the licensee states that the drywell, vent stack, and site area radiation monitors function as an alternate means of determining the secondary containment area radiation levels. Based on this, we find this deviation acceptable.

3.3.12 Plant and Environs Radiation, Beta and Low Energy Photons

Regulatory Guide 1.97 recommends instrumentation for this variable with a range from 10^{-3} rads/hour to 10^{4} rads/hour beta. The licensee's instrumentation will measure up to 10^{2} R/hour beta. The licensee states that this range is adequate for portable plant use.

From a radiological standpoint, if the radiation levels reach or exceed the upper limit of the range (10^{2} R/hour), personnel are not allowed in the area except for life saving. We therefore find the provided range acceptable.

3.3.13 Accident Sampling (Primary Coolant, Containment Air, and Sump)

The licensee's sample system can obtain samples and provide the analyses within the ranges recommended for this variable, from the reactor coolant and the containment air. The licensee's post-accident sampling

system deviates from the recommended criteria because the pH is not resolvable for undiluted samples.

The licensee takes exception to the guidance of Regulatory Guide 1.97 with respect to post-accident sampling capability. This exception goes beyond the scope of this review and was addressed and approved by the NRC as part of the review of NUREG-0737, Item II.B.3.

3.3.14 Coolant Level in Reactor Vessel

Regulatory Guide 1.97 recommends instrumentation for this variable with a range from the bottom of the core support plate to the lesser of the top of the vessel or the centerline of the main steamline. The licensee states that this requirement is -154 inches to +244 inches. The top of the active fuel is the referenced zero for these limits. The licensee's instrumentation has a range from -200 inches to +200 inches. Thus, the licensee does not monitor the upper 44 inches of the recommended range.

The licensee states that it is not reasonable to increase the range. To do so would require putting new taps in the reactor vessel. The coolant injection systems automatically trip before the water level exceeds the upper limit of the range. Based on these considerations, we find the level range provided acceptable.

3.3.15 Drywell Pressure

Regulatory Guide 1.97 recommends different ranges of instrumentation for this variable. These ranges include zero to design pressure (56 psig), -5 psig to +3 psig, and zero to 110 percent of design pressure. The licensee's instrumentation consists of PT 16-19-29A and PT 16-19-29B, each with a range of -15 psig to 260 psig, and PT 16-19-28 with an unspecified narrow-range. The licensee states that the PT-16-19-29A and B instruments are inclusive of all these ranges and the ranges specified for the variable primary containment pressure.

The regulatory guide recommends a Category 2 narrow-range drywell pressure channel. The licensee has provided Category 1 wide-range channels that exceed all of the regulatory guide recommendations. Therefore, we find the provided instrumentation acceptable.

3.3.16 Noble Gases and Vent Flow Rate

Regulatory Guide 1.97 requires monitoring all potential release points for noble gas and vent flow. It makes specific allowance for a single monitoring station if all potential discharges are through a common plant vent. The licensee states that all anticipated releases discharge through the plant stack. The licensee monitors this common plant vent with instrumentation that satisfies the recommendations of the regulatory guide. The licensee states that this instrumentation is in a mild environment and designed to measure any radiation encountered. The licensee states that this instrumentation envelopes the range specified by the regulatory guide. Based on this, we find the provided instrumentation acceptable.

3.3.17 Condensate Storage Tank Level

Regulatory Guide 1.97 recommends Category 3 indication of the water level from the top to the bottom of this tank. The licensee's instrumentation satisfies the Category 3 requirements. The tank is 38-1/4 feet high. The instrument range is zero to 35 feet.

The licensee states that the volume to height ratio is nonlinear above 36-3/4 feet. The licensee's procedures maintain the tank level below 35 feet. This prevents flow through the tank overflow vent. Based on this, we find the range acceptable.

3.3.18 Main Steamline Isolation Valves' Leakage Control System Pressure

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable. The licensee states that Vermont Yankee has no leakage control system for the main steamline isolation valves. Therefore, this variable does not require instrumentation.

3.3.19 Isolation Condenser System

Vermont Yankee does not have an isolation condenser. Therefore, the variables isolation condenser shell side water level and isolation condenser system valve position do not require instrumentation.

3.3.20 Standby Liquid Control System (SLCS) Storage Tank Level

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable with a range from the top to the bottom of the tank. Category 2 criteria include environmental qualification. The licensee's instrumentation has no environmental qualification. The range for LI 11-66 is zero to 127.5 inches. The tank height is 132.5 inches, 5 inches beyond the available range.

The environmental qualification rule, 10 CFR 50.49, clarifies this requirement. It is concluded that the guidance of Regulatory Guide 1.97 has been superseded by a regulatory requirement. The licensee included this instrumentation in the scope of their environmental qualification program. The licensee uses this instrumentation with an alternate, independent shutdown method, where the environment is mild. Because the licensee included this instrumentation in their 10 CFR 50.49 review, we find the provided instrumentation acceptable.

The licensee states that procedures restrict the SLCS storage tank level to below 122 inches. The operator has specific procedural steps to follow should the level exceed 122 inches or approach 127.5 inches. The power source for the instrumentation is appropriate for this variable. Based on the licensee's description and justification, we find the provided instrumentation and range acceptable.

3.3.21 High Radioactivity Liquid Tank Level

Regulatory Guide 1.97 recommends instrumentation will a range from the top to the bottom of the tank for this variable. The licensee lists six tanks along with the range for each tank.

waste collection tank	zero to 140 inches
waste surge tank	zero to 336 inches
floor drain collection tank	zero to 140 inches
floor drain sample tank	zero to 250 inches
waste sample tank 16A	zero to 215 inches
waste sample tank 16B	zero to 215 inches

The licensee states that these instruments essentially cover the recommended range. Based on this statement, we find the provided ranges acceptable.

3.3.22 Emergency Ventilation Damper Position

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable. Category 2 criteria include environmental qualification. The licensee states that the dampers and associated cables and equipment are in non-harsh environments. Therefore, we find the instrumentation provided for this variable acceptable.

3.3.23 Status of Standby Power

Regulatory Guide 1.97 recommends Category 2 instrumentation for this variable. Category 2 criteria include environmental qualification. The licensee states that the instrumentation for MCC 89A (UPS 1A), MCC 89B (UPS 1B), ECCS 24-Vdc bus A, and ECCS 24-Vdc bus B is environmentally qualified. The remaining instrumentation for this variable is all located in non-harsh environments. Therefore, we find the instrumentation provided for this variable acceptable.

3.3.24 Estimation of Atmospheric Stability

Regulatory Guide 1.97 recommends instrumentation for this variable with a range of -9°F to +18°F or an analogous range for alternative stability analysis. The licensee's instrumentation has a range of -5°F to +15°F. The licensee states that this range has been historically adequate and covers all seven stability classes.

Table 1 of Regulatory Guide 1.23 (Reference 10) provides seven atmospheric stability classifications based on the difference in temperature per 100-meter elevation change. These classifications cover from extremely unstable to extremely stable. A temperature difference greater than +4°C or less than -2°C has no impact on the stability classification. The licensee's instrumentation includes this range. Therefore, we find this instrumentation acceptable for determining atmospheric stability.

3.3.25 Recording

Regulatory Guide 1.97 recommends the recording of certain instrumentation signals. The regulatory guide states that if direct and immediate trend or transient information is not essential for operator information or action, the recording may be by computer.

The licensee addresses recording in Reference 8. The only variables identified that require direct and immediate trending are reactor vessel pressure and reactor vessel level. The regulatory guide recommends continuously recording both channels in this case. The licensee uses LR/PR 2-3-67 and LR/PR 2-3-68 to record both channels of these variables. The licensee indicates that dedicated recorders or the emergency response facility information system record the other recommended variables. We find the described recording capabilities acceptable.

4. CONCLUSIONS

Based on our review, we find that the licensee either conforms to or is justified in deviating from Regulatory Guide 1.97, with the following exceptions.

1. Neutron flux -- The licensee's instrumentation is acceptable on an interim basis until Category 1 instrumentation, recently developed by industry, is installed by the licensee. See Section 3.3.1.

2. Cooling water temperature to ESF system components -- The licensee should justify the deviation in range. See Section 3.3.9.

5. REFERENCES

1. Letter, NRC, (D. G. Eisenhut) to All Licensees of Operating Reactors, Applicants for Operating Licenses, and Holders of Construction Permits, "Supplement No. 1 to NUREG-0737--Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982.

2. Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident, Regulatory Guide 1.97, Revision 2, NRC Office of Standards Development, December 1980.

3. Clarification of TMI Action Plan Requirements, Requirements for Emergency Response Capability, NUREG-0737 Supplement No. 1, NRC, Office of Nuclear Reactor Regulation, January 1983.

4. Letter, Vermont Yankee Nuclear Power Corporation (W. P. Murphy) to NRC (D. B. Vassallo), "NUREG 0737, Supplement 1 - Regulatory Guide 1.97," October 30, 1984, FVY 84-127.

5. Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Environs Conditions During and Following an Accident, Regulatory Guide 1.97, Revision 3, NRC Office of Nuclear Regulatory Research, May 1983.

6. Letter, Vermont Yankee Nuclear Power Corporation (W. P. Murphy) to NRC (D. B. Vassallo), "Additional Information in Response to Preliminary Staff Review of NUREG-0737, Supplement No. 1 - Regulatory Guide 1.97 Submittal," October 25, 1985, FVY-85-99.

7. Letter, Vermont Yankee Nuclear Power Corporation (R. W. Capstick) to NRC (V. L. Rooney), "NUREG-0737, Supplement No. 1 - Regulatory Guide 1.97 Program Status," August 11, 1987, FVY-87-77.

8. Letter, Vermont Yankee Nuclear Power Corporation (R. W. Capstick) to NRC, "NUREG-0737, Supplement No. 1 - Regulatory Guide 1.97 Program Status Clarification," July 28, 1988, FVY 88-064.

9. Letter, Vermont Yankee Nuclear Power Corporation (R. W. Capstick) to NRC, "NUREG-0737, Supplement No. 1 - Regulatory Guide 1.97 Program Status," September 1, 1989, BVY 89-80.

10. Onsite Meteorological Programs, Regulatory Guide 1.23, NRC, February 17, 1972 or Meteorological Programs in Support of Nuclear Power Plants, proposed Revision 1 to Regulatory Guide 1.23, NRC Office of Standards Development, September 1980.

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

This EG&G Idaho, Inc., report documents the review of the Regulatory Guide 1.97, Revision 3, submittals for Vermont Yankee Station, and identifies areas of nonconformance to the regulatory guide. Exceptions to Regulatory Guide 1.97 are evaluated and those areas where sufficient basis for acceptability is not provided are identified.

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