CONFORMANCE TO REGULATORY GUIDE 1.97
POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

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ABSTRACT

This EG&G Idaho, Inc., report provides a review of the Point Beach Nuclear Plant, Unit Nos. 1 and 2, submittal for Regulatory Guide 1.97 and identifies areas of nonconformance. Any exception to these guidelines are evaluated and those areas where sufficient basis for acceptability is not provided are identified.

FOREWORD

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 Integration, by EG&G Idaho, Inc., NRC Licensing Support Section.

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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 1 to NUREG-0737, "TMI Action Plan Requirements" (Reference 3).

Wisconsin Electric Power Company, the licensee for Point Beach Nuclear Plant, Unit Nos. 1 and 2, provided a response to the Regulatory Guide 1.97 portion of the generic letter on September 1, 1983 (Reference 4).

This report provides an evaluation of this submittal.

2. REVIEW REQUIREMENTS

Section 6.2 of NUREG-0737, Supplement 1, sets forth the documentation to be submitted in a report to the NRC describing how the licensee meets the guidance of Regulatory Guide 1.97 as applied to emergency response facilities. The submittal should include documentation that provides 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.

Further, the submittal should identify deviations from the guidance in the regulatory guide and provide supporting justification or alternatives.

Subsequent to the issuance of 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 matter. At these meetings, it was noted that the NRC review would only address exceptions taken to the guidance of Regulatory Guide 1.97. Further, where licensees or applicants explicitly state that instrument systems conform to the provisions of the guide it was noted that no further staff review would be necessary. Therefore, this report only addresses exceptions to the guidance of Regulatory Guide 1.97. The following evaluation is an audit of the licensee's submittal based on the review policy described in the NRC regional meetings.

3. EVALUATION

The licensee provided a response to the NRC generic letter 82-33 on September 1, 1983. This evaluation is based on that submittal.

3.1 Adherence to Regulatory Guide 1.97

The licensee stated that their submittal provides a detailed account of the conformance of Wisconsin Electric Power Company's Point Beach Nuclear Power Plant, Unit Nos. 1 and 2, to the recommendations of Revision 2 to Regulatory Guide 1.97. The licensee further states that the information provided in their submittal meets the requirements of Supplement 1 to NUREG-0737, Section 6. Therefore, it is concluded that the licensee has provided an explicit commitment on conformance to the guidance of Regulatory Guide 1.97. Exceptions to 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 information required to permit the control room operator to take specific manually controlled safety actions. The licensee classified the following instrumentation as T pe A variables:

1. Refueling water storage tank level
2. Reactor coolant system pressure
3. Containment pressure
4. Condensate storage tank level
5. Steam generator level
6. Auxiliary feedwater flow
7. Core exit temperature
8. Degrees of subcooling
9. Steam generator pressure
10. Pressurizer level.

All of the above variables are also included as Type B, C and D variables and meet Category 1 requirements consistent with the requirements for Type A variables except for 1 and 8 above. These are not environmentally qualified because they are located in a mild environment as defined by 10 CFR 50.49.

3.3 Exceptions to Regulatory Guide 1.97

The licensee identified the following exceptions to the requirements of Regulatory Guide 1.97.

3.3.1 Neutron Flux

The licensee takes exception to the environmental and seismic qualification recommended by Regulatory Guide 1.97 for this variable. The licensee states that the source and intermediate range neutron flux monitors are not required for LOCA/HELB mitigation. Reactivity control is automatically achieved and maintained by reactor scram and injection of boric acid into the Reactor Coolant System (RCS) by the safety injection system following a postulated LOCA/HELB. They further state that control rod position indication and analysis of RCS samples for boron are considered adequate to ensure reactor shutdown. The licensee also states that these monitors are not within the scope of 10 CFR 50.49(b) as reported in the May 20, 1983, letter to Mr. H. R. Denton, regarding environmental qualification.

The measurement of neutron flux is a key variable as defined in the regulatory guide. As key variables are classified Category 1, the request for use of non-seismically qualified instrumentation is not justified. The licensee should commit to the installation of seismically qualified source and intermediate range neutron flux instrumentation.

10 CFR 50.49(b)3 requires the environmental qualification of all Regulatory Guide 1.97 Category 1 and 2 variables. Thus, the environmental qualification guidance of Regulatory Guide 1.97 has been superseded by the environmental qualification rule, 10 CFR 50.49. Therefore, environmental qualification is beyond the scope of this review and should be addressed in accordance with 10 CFR 50.49.

3.3.2 Reactor Coolant System Soluble Boron Concentration

The licensee uses a grab sample with analysis for this variable. The following justification is provided by the licensee. "The automatic injection of boric acid into the RCS by the safety injection system following a postulated LOCA/HELB is monitored and verified through the use of qualified instrumentation. In addition, since all sources of water for the safety injection system (SI Accumulators, Boric Acid Storage Tanks, and Refueling Water Storage Tanks) are required by Technical Specifications to contain boric acid solution of a minimum concentration, the proper operation of the safety injection system ensures an adequate boron concentration in the reactor coolant to achieve and maintain the safe shutdown of the reactor core. The RCS soluable boron content is not expected to change rapidly, if at all, following the initial boration during the ECCS injection phase of an accident. Therefore, periodic analysis of RCS samples would detect any significant changes in boron concentration. Instrumentation to continuously monitor RCS soluable boron concentration is not required since periodic analysis of RCS grab samples is adequate for verification of reactivity control."

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 is being addressed by the NRC as part of their review of NUREG-0737, Item II.B.3.

3.3.3 Containment Isolation Valve Position

The licensee takes exception to the environmental qualification and the single failure criteria for this variable.

The licensee's justification for the environmental qualification deviation is that, consistent with NRC Generic Letter 82-09 and 10 CFR 50.49, those valve position indicators associated with containment isolation valves located in a mild environment outside containment are not required to be environmentally qualified. The licensee's valve position indicators located in

a potentially harsh accident environment are being environmentally qualified in accordance with 10 CFR 50.49. We find this position acceptable.

From the information provided, we find the licensee deviates from a strict interpretation of the Category 1 redundancy recommendation. Only the active valves have position indication (i.e., check valves have no position indication). Since redundant isolation valves are provided, we find that redundant indication per valve is not intended by the regulatory guide. Position indication of check valves is specifically excluded by Table 2 of Regulatory Guide 1.97. Therefore, we find that the instrumentation for this variable is acceptable.

3.3.4 Radioactivity Concentration or Radiation Level in Circulating Primary Coolant

The licensee has provided the following basis for not providing this variable. "Analysis of RCS grab samples, which will be taken using environmentally and seismically qualified valves, is adequate to detect the breach of the fuel cladding. Periodic samples and analyses are more than timely enough to detect any slow deterioration of the fuel cladding. The remote possibility of rapid breach of the fuel cladding would most likely result only from an inadequate core cooling (ICC) event which would be detected by numerous other diverse instruments. In the event of approach to ICC, the RCS sampling frequency would be appropriately increased to detect fuel failures. As a diverse backup, an area radiation monitor in the sample room could be used, provided containment isolation has not been initiated, thus securing RCS sample flow to these monitors. In the event of a LOCA, the containment radiation monitors could be used as a diverse backup for this purpose."

Based on the justification provided by the licensee, we conclude that the instrumentation supplied for this variable is adequate, and therefore, acceptable.

3.3.5 Effluent Radioactivity--Noble Gas Effluent from Condenser Air Removal System Exhaust

The existing instrumentation for this variable has a range of 0.01 to 100 mR/hr (equivalent to 5.72×10^{-4} to 5.72 μCi/cc). Regulatory Guide 1.97 recommends 10^{-6} to 10^{-2} μCi/cc. The licensee's justification for this deviation is that the detectors are currently strapped to a pipe. New detectors will be mounted in a pipe well to increase the sensitivity. The new range will be determined when the new detectors are installed and it is expected to cover the range recommended by Regulatory Guide 1.97.

The licensee should confirm that the new range includes that recommended by Regulatory Guide 1.97. Any deviation from the range recommended by Regulatory Guide 1.97 should be justified.

3.3.6 Radiation Exposure Rate (inside buildings or areas, e.g., auxiliary building, reactor shield building annulus, fuel handling building, which are in direct contact with primary containment where penetrations and hatches are located)

The licensee takes exception to the environmental qualification recommended by Regulatory Guide 1.97 for this instrumentation. They provide the following justification. "Radiation exposure rate is an ineffective means of detecting the breach of containment. Since other variables (e.g., Auxiliary Building Exhaust Radioactivity) would be used for this purpose, the environmental qualification of this instrument is not required."

We concur with the justification provided by the licensee for this deviation. In addition, Regulatory Guide 1.97, Revision 3, May 1983 (Reference 5) has deleted these exposure rate monitors from the guide.

3.3.7 RHR Heat Exchanger Outlet Temperature

Regulatory Guide 1.97, Revision 2 recommends an instrument range of 32°F to 350°F for this variable. The provided range is 50°F to 350°F. The following justification was given by the licensee for this deviation. "This

value (50°F) is the lowest possible value expected for this variable. Therefore, this range meets the intent of Regulatory Guide 1.97 and is adequate for monitoring system operation."

Based on the licensee's statement that the instrumentation will remain on scale for any anticipated event, we find the range acceptable.

3.3.8 Accumulator Tank Level

The licensee takes exception to the range and environmental qualification recommendations of Regulatory Guide 1.97 for this variable. The licensee provided the following justification for these deviations. "The accumulator level instruments are not required for mitigation of LOCA/HELB since the safety injection accumulators are passive devices. The accumulator pressure instruments, which are qualified, could be used to derive an equivalent accumulator water level."

The level range provided (62 percent to 65 percent of volume) is not adequate to monitor accumulator status during and following an accident. Regulatory Guide 1.97 recommends a range of 10 percent to 90 percent volume. The licensee should commit to the installation of instrumentation for this variable that meets Regulatory Guide 1.97 recommendations for range and Category 2.

The environmental qualification guidance of Regulatory Guide 1.97 has been superseded by the environmental qualification rule, 10 CFR 50.49. Therefore, environmental qualification is beyond the scope of this review and should be addressed in accordance with 10 CFR 50.49.

3.3.9 Accumulator Isolation Valve Position

The licensee takes exception to the environmental qualification recommended by Regulatory Guide 1.97 for this variable. The following justification is provided by the licensee. "This valve is normally open with power administratively removed (i.e., breaker locked open) from the motor operator.

Since the closing of this valve is not required for accident mitigation, environmental qualification of the valve position indicator is not required. This valve is not within the scope of 10 CFR 50.49(b) as reported in our May 20, 1983 letter to Mr. H. R. Denton regarding environmental qualification."

10 CFR 50.49(b)3 requires the environmental qualification of all Regulatory Guide 1.97 Category 1 and 2 variables. Thus, the environmental qualification guidance of Regulatory Guide 1.97 has been superseded by the environmental qualification rule, 10 CFR 50.49. Therefore, environmental qualification is beyond the scope of this review and should be addressed in accordance with 10 CFR 50.49.

3.3.10 Boric Acid Charging Flow

The licensee states that environmental qualification and seismic qualification are not needed for this variable. The following justification was given by the licensee. The charging pumps are not used for mitigation of design-basis accidents. Therefore, environmental and seismic qualification of the charging line flow instrument is not required. Boric acid is injected into the RCS during LOCA/ HELB accident conditions using the safety injection system, which has qualified flow instruments.

As the charging pumps are not utilized at Point Beach as a safety system, we find that the instrumentation provided for this variable is acceptable.

3.3.11 Flow in HPI System

The instrumentation provided for this variable has a range 0 to 1500 gpm (0 to 107 percent of design flow). Regulatory Guide 1.97 recommends 0 to 110 percent of design flow. The licensee's justification for this deviation is that the upper range of 107 percent of high pressure safety injection flow is adequate to monitor the expected range of flow conditions. The 107 percent of design flow is close to 110 percent of design flow and is adequate to determine pump runout flow rate in an accident.

The existing range is adequate to provide the necessary accident and post-accident information. Therefore, this is an acceptable deviation from Regulatory Guide 1.97.

3.3.12 Pressurizer Heater Status

The licensee takes exception to using electric current to monitor this variable as the regulatory guide recommends. The justification given by the licensee for the heater status deviation is that pressurizer heaters are not required for mitigation of design-basis accidents. The licensee says that breaker positions for the heater groups are an adequate indication of heater status. Pressurizer temperature and pressure are also available as backup indications of heater status.

The current to the pressurizer heaters is recommended by Regulatory Guide 1.97, Table 2, for the purpose of determining the operating status of the heaters. It is not enough to monitor the circuit breaker position to know how much energy is being used and to determine if there are inoperable heaters. The licensee should provide Category 2 instrumentation to monitor the current to the pressurizer heaters.

3.3.13 Quench Tank Temperature

The licensee takes exception to the range recommended in Regulatory Guide 1.97 for this variable (50°F to 750°F). The provided range is 0 to 300°F. The licensee's justification for this deviation is that the upper range limit (300°F) is close to the saturation temperature (338°F) for the tank design pressure and rupture disk relief pressure of 100 psig. The licensee also states that tank pressure can be used as a backup and that no operator action is required for accident mitigation based on this parameter.

The range should be increased to read the saturation temperature corresponding to the rupture disk relief pressure. The licensee should expand the existing instrumentation range to cover a minimum of 50°F to 338°F.

3.3.14 Heat Removal by the Containment Fan Heat Removal System

The licensee is not supplying Category 2 instrumentation for this variable, indicating that this variable is for backup indication; that the accomplishment of post-accident cooling is verified by monitoring the containment pressure and temperature.

As the containment pressure and air temperature are affected by the containment fan heat removal system and the containment spray system, and is a function of break size and location, we find that the containment pressure and air temperature do not show conclusively that the containment fan heat removal system is operating. The licensee should provide Category 2 instrumentation for this variable.

3.3.15 Containment Atmosphere Temperature

The instrumentation provided for this variable has a range of 50° to 350°F. Regulatory Guide 1.97 recommends a range of 40°F to 400°F. The licensee's submittal does not provide a justification. The licensee should justify this deviation or change the range to comply with the recommendation of Regulatory Guide 1.97.

3.3.16 Makeup Flow-in, Letdown Flow-out, and Volume Control Tank Level

The licensee takes exception to the environmental qualification, seismic qualification, and quality assurance recommendation of Regulatory Guide 1.97 for these variables. The licensee provided the following justification for these deviations. "The CVCS (Chemical and Volume Control System) except the BASTs (Boric Acid Storage Tanks) are not required for mitigation of design-basis LOCA/HELB accidents. RCS makeup and boric acid injection is performed by the separate safety injection system. Therefore, qualification and QA on these instruments is not required.

Additionally, we note that the makeup and letdown lines are isolated by an accident signal.

As these variables are not utilized at Point Beach in conjunction with a safety system, we find that the instrumentation provided is acceptable.

3.3.17 Component Cooling Water Temperature to ESF System

Regulatory Guide 1.97, Revision 2 recommends a range of 32 to 200°F for this variable. The provided instrumentation has a range of 50 to 200°F. The justification provided by the licensee is that this value (50°F) is the lowest possible value expected for this variable. Therefore, this range meets the intent of Regulatory Guide 1.97 and is adequate for monitoring system operation.

Based on the licensee's statement that the instrumentation will remain on scale for any anticipated event, we find that the range is acceptable.

3.3.18 Radioactive Gas Holdup Tank Pressure

Regulatory Guide 1.97 recommends a range for this variable to cover 0 to 150 percent of the design pressure. The instrumentation provided has a range of 0 to 100 percent of design pressure. The justification given by the licensee is that the upper range limit of 100 percent of tank design pressure is adequate to monitor storage capacity as recommended by Regulatory Guide 1.97.

Adequate justification for this deviation has not been provided by the licensee. The licensee should either change this instrumentation to conform with Regulatory Guide 1.97, or show that the existing pressure range cannot be exceeded under accident or post-accident conditions.

3.3.19 Emergency Ventilation Damper Position

The licensee takes exception to environmental qualification and seismic qualification for this variable. The licensee provided the following justification for these deviations. "This indication is not required for mitigation of design-basis LOCA/HELB accidents. The radiation monitoring system

provides a backup indication if these dampers are out of position. Therefore, qualification of these damper position indicators is not required."

The environmental qualification guidance of Regulatory Guide 1.97 has been superseded by the environmental qualification rule, 10 CFR 50.49. Therefore environmental qualification is beyond the scope of this review and should be addressed in accordance with 10 CFR 50.49.

In accordance with Regulatory Guide 1.97, this instrumentation is recognized as necessary for mitigation of accidents. Having diverse methods of determining damper position is not considered adequate justification for this deviation. Therefore, the appropriate seismic qualification should be performed and documented in accordance with Category 2 recommendations.

3.3.20 Radiation Exposure Rate (inside buildings or areas where access is required to service equipment important to safety)

The licensee has provided area radiation instrumentation with various ranges. Some do not have the range recommended by Regulatory Guide 1.97 (10^{-1} to 10^{4} R/hr). The licensee's justification for this deviation is that the existing ranges are based on expected post-accident radiation dose rates. Two overlapping detectors are used where required to cover the entire expected range.

The ranges of the existing instrumentation are adequate. The areas where high radiation levels would be expected post-accident, have both high and low range instruments. These overlapping instruments cover the range recommended by Regulatory Guide 1.97. Therefore we consider this deviation from Regulatory Guide 1.97 to be acceptable.

Exception is also taken to the environmental qualification recommended by Regulatory Guide 1.97 for this instrumentation. The licensee provided the following justification for this deviation. "Portable survey meters are the

primary means of measuring radiation levels for personnel access. Area radiation monitors are not appropriate for radioactivity release detection and assessment."

Revision 3 of Regulatory Guide 1.97 recommends Category 3 instrumentation for this variable. Environmental qualification is not required. Therefore, the instrumentation for this variable is acceptable.

3.3.21 Vent from Steam Generator Safety Relief Valves or Atmospheric Dump Valves

The licensee takes exception to the range and environmental qualification for this instrumentation. The range of the provided instrument is 1 to 10^4 mR/hr which is equivalent to 0.15 µCi/cc to 1.5 x 10^3 µCi/cc. Regulatory Guide 1.97 recommends 0.10 to 10^3 µCi/cc. The licensee's justification for this deviation is that the actual lower range is judged to be adequate.

Considering instrument accuracy in this lower range we find that this range is adequate.

The following justification was given by the licensee for the environmental qualification deviation. "The detectors are located outside containment on the steamline upstream of the main steam isolation valves. These detectors are located in a mild environment except for the possibility of a steamline break outside containment near these detectors. In this case, feedwater flow to the faulted S/G will be isolated and the only radioactive release will be the contents of the S/G whose low-level radioactivity is known from periodic samples."

The environmental qualification guidance of Regulatory Guide 1.97 has been superseded by the environmental qualification rule, 10 CFR 50.49. Therefore, environmental qualification is beyond the scope of this review and should be addressed in accordance with 10 CFR 50.49.

3.3.22 Plant and Environs Radiation (portable instrumentation)

The licensee takes exception to the range recommended by Regulatory Guide 1.97 for this variable (10^{-3} to 10^{4} R/hr, photons; 10^{-3} to 10^{4} rads/hr, beta). The instrumentation provided does not meet the upper range (10^{-4} to 10^{3} R/hr, gamma; 10^{-3} to 5×10^{2} rad/hr, beta). The following justification was provided by the licensee for this deviation. "The upper range limit is adequate since entrance to any high radiation area (i.e., $\geq$100 mR/hr) would be under tight administrative controls to preclude overexposure except in an emergency."

This instrumentation is portable and would not be used to assess levels of radiation greater than the range provided by the licensee. Therefore, this is an acceptable deviation from Regulatory Guide 1.97.

3.3.23 Estimation of Atmospheric Stability

The licensee takes exception to the temperature range (-9°F to +18°F) that Regulatory Guide 1.97 recommends for this variable. The supplied range is -10°F to +10°F. The following justification was provided by the licensee for this deviation. "This range is based on an autoconvective lapse rate of approximately 7°F per 325 feet which is the maximum theoretical temperature gradient above which turbulent mixing occurs to equalize the temperatures."

Table 1 of Regulatory Guide 1.23 (Reference 6) provides 7 vertical atmospheric stability classifications based on the difference in temperature per 100 meters elevation change. These classifications cover from extremely unstable to extremely stable. Any temperature difference greater than +4°F or less than -2°F does nothing to the stability classification. The licensee's instrument accuracy is as specified in Regulatory Guide 1.97, the temperature range and the vertical separation are both greater than that recommended in Regulatory Guide 1.23. Therefore, we find that this instrumentation is acceptable to determine the atmospheric stability.

3.3.24 Accident Sampling (primary coolant, containment air and sump)

The licensee takes exception to the ranges recommended by Regulatory Guide 1.97 for the following variables:

a. Boron content--0 to 6000 ppm recommended. 20 to 6000 ppm is provided.

b. Chloride content--0 to 20 ppm is recommended, 0.1 to 20 ppm is provided. The licensee has no on-site analysis capability for this variable.

c. Dissolved hydrogen--0 to 2000 cc/kg is recommended, 10 to greater than 2000 cc/kg is provided.

d. Dissolved oxygen and oxygen content--these two variables are not read at this station.

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 is being addressed by the NRC as part of their review of NUREG-0737, Item II.B.3.

4. CONCLUSIONS

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

1. Neutron flux--seismic qualification for the source and intermediate range neutron flux monitors should be performed by the licensee; environmental qualification needs to be addressed in accordance with 10 CFR 50.49 (Section 3.3.1).

2. Effluent radioactivity-noble gas effluent from condenser air removal system exhaust--the licensee should supply the range of the new installation. Any deviation from the Regulatory Guide 1.97 recommended range should be justified (Section 3.3.5).

3. Accumulator tank level--the licensee should commit to the installation of Category 2 instrumentation with the recommended range (10 to 90 percent volume) for this variable; environmental qualification should be addressed in accordance with 10 CFR 50.49 (Section 3.3.8).

4. Accumulator isolation valve position--environmental qualification needs to be addressed in accordance with 10 CFR 50.49 (Section 3.3.9).

5. Pressurizer heater status--the licensee should install Category 2 ammeters for indication of pressurizer heater status (Section 3.3.12).

6. Quench tank temperature--since the tank design pressure and rupture disk release pressure is 100 psig, instrumentation with a range including 338°F should be provided (Section 3.3.13).

7. Heat removal by the containment fan heat removal system--the licensee should install Category 2 instrumentation as recommended by Regulatory Guide 1.97 (Section 3.3.14).

8. Containment atmosphere temperature--the licensee should provide the recommended range, or justify deviating (Section 3.3.15).

9. Radioactive gas holdup tank pressure--the licensee should show that the existing range cannot be exceeded, or re-range in accordance with Regulatory Guide 1.97 (Section 3.3.18).

10. Emergency ventilation damper position--environmental qualification needs to be addressed in accordance with 10 CFR 50.49; seismic qualification and quality assurance requirements should be met and documented in accordance with Category 2 requirements (Section 3.3.19).

11. Vent from steam generator safety relief valves or atmospheric dump valves--environmental qualification should be addressed in accordance with 10 CFR 50.49 (Section 3.3.21).

5. REFERENCES

1. NRC letter, 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, U.S. Nuclear Regulatory Commission (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. Wisconsin Electric Power Company (WE) letter C. W. Fay to Director, Office of Nuclear Reactor Regulation, September 1, 1983.

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

6. Onsite Meteorological Programs, Regulatory Guide 1.23 (Safety Guide 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.