July 17, 2001

Mr. W.R. McCollum, Jr.
Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 (ONS) RE: EXEMPTION FROM THE REQUIREMENTS OF HYDROGEN CONTROL REQUIREMENTS OF 10 CFR PART 50, SECTION 10 CFR 50.44, 10 CFR PART 50, APPENDIX A, GENERAL DESIGN CRITERION 41, AND 10 CFR PART 50, APPENDIX E SECTION VI (TAC NOS. MA9635, MA9636, AND MA9637)

Dear Mr. McCollum:

By letter dated July 26, 2000, Duke Energy Corporation requested an exemption from certain requirements of Title 10 of the *Code of Federal Regulations* 10 (CFR) Section 50.44, 10 CFR Part 50, Appendix A, General Design Criterion 41, and 10 CFR Part 50, Appendix E, Section VI pertaining to hydrogen control system requirements (i.e., containment post-accident hydrogen monitors and recombiners) and removal of these requirements from the ONS design basis. We have reviewed the information provided and concluded that the requested exemption for the hydrogen recombiners is justified since special circumstances necessary to meet the criteria of 10 CFR 50.12(a)(2)(ii) do exist to justify granting the exemption from certain parts of 10 CFR 50.44 and General Design Criterion 41. However, the staff has determined that we cannot support your requested exemption from the functional requirements for hydrogen monitoring contained in the regulations listed above.

A copy of the exemption and the supporting safety evaluation are enclosed. The exemption has been forwarded to the Office of the Federal Register for publication. The submittal also requested certain changes to the Oconee Nuclear Station Technical Specifications, which you have withdrawn.

Sincerely,

/RA/

David E. LaBarge, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosures: As stated (2)

cc w/encls: See next page

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Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

July 17, 2001

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

DUKE ENERGY CORPORATION

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

DOCKET NOS. 50-269, 50-270, AND 50-287

EXEMPTION

1.0 BACKGROUND

The Duke Energy Corporation (the licensee) is the holder of Facility Operating License Nos. DPR-38, DPR-47, and DPR-55, which authorize operation of the Oconee Nuclear Station, Units 1, 2, and 3 (ONS). The licenses provide, among other things, that the facilities are subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of three pressurized water reactors located in Seneca County in South Carolina.

2.0 REQUEST/ACTION

By letter dated July 26, 2000, Duke Energy Corporation, licensee for the ONS, requested an exemption from certain requirements of 10 CFR 50.44, 10 CFR Part 50, Appendix A, General Design Criterion 41, and 10 CFR Part 50, Appendix E, Section VI pertaining to the hydrogen control system requirements (i.e., recombiners and containment post-accident hydrogen monitors) and the removal of these requirements from the ONS design basis.

Regulatory requirements for the hydrogen control system are specified in 10 CFR 50.44 and 10 CFR Part 50, Appendix A, (General Design Criteria 41, 42, and 43). Additional staff guidance is provided in Regulatory Guide (RG) 1.7. Staff review and acceptance criteria are specified in Section 6.2.5 of the Standard Review Plan. With regard to combustible gas control system requirements, ONS is subject to the requirements of 10 CFR 50.44(g).

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50, when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present.

For this exemption, these special circumstances include consideration that the quantity of hydrogen prescribed by 10 CFR 50.44(d) and RG 1.7 which necessitated the need for hydrogen recombiners would be bounded by the hydrogen generated during a severe accident. As shown in the attached safety evaluation, the staff has found that the relative importance of hydrogen combustion for large, dry containments with respect to containment failure is quite low. This finding supports the argument that the hydrogen recombiners are not risk significant from a containment integrity perspective and that the risk associated with hydrogen combustion is not from design basis accidents but from severe accidents. Studies have shown that the majority of risk to the public is from accident sequences that lead to containment failure or bypass, and that the contribution to risk from accident sequences involving hydrogen combustion is actually quite small for large, dry containments such as Oconee's. This is true despite the fact that the hydrogen produced in these events is substantially larger than the hydrogen production postulated by 10 CFR 50.44(d) and RG 1.7. Hydrogen combustion sequences that could lead to early containment failure typically involve up to 75 percent core metal-water reaction. Hydrogen combustion sequences that could lead to late containment failure involve additional sources of hydrogen due to the interaction of corium and the concrete basemat after vessel breach. Although the recombiners are effective in maintaining the RG 1.7 hydrogen concentration below the lower flammability limit of 4 volume percent, they are overwhelmed by the larger quantities of hydrogen associated with severe accidents that would typically be released over a much shorter time period (e.g., 2 hours). However, NUREG/CR-4551 states that hydrogen combustion in the period before containment failure is considered to present no threat to large, dry containments. Table A.4-5 of NUREG/CR-4551 shows that the contribution of hydrogen combustion to late containment failure is also very small. Therefore, the relative importance of hydrogen combustion for large, dry containments with respect to containment failure has been shown to be quite low.

The recombiners can, however, prevent a subsequent hydrogen burn if needed due to radiolytic decomposition of water and corrosion in the long term. Analysis performed in accordance with the methodology of RG 1.7 shows that the hydrogen concentration will not reach 4 volume percent for 15 days after initiation of a design basis Loss of Coolant Accident (LOCA). Additionally, as described in the attached safety evaluation, hydrogen concentrations on the order of 6 percent or less are bounded by hydrogen generated during a severe accident and would not be a threat to containment integrity since there is ample time between burns to reduce elevated containment temperatures using the installed containment heat removal systems. The ONS Individual Plant Examination (IPE) concluded that containment survival is almost certain following hydrogen combustion when the Reactor Building Cooling Units and the Reactor Building Spray System are operating.

The underlying purpose of 10 CFR 50.44 is to show that, following a LOCA, an uncontrolled hydrogen-oxygen recombination would not take place, or that the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function. Based on the analysis, which includes the staff's evaluation of the risk from hydrogen combustion, resolution of Generic Issue 121, "Hydrogen Control for PWR Dry Containments," and the ONS IPE, the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function without credit for the hydrogen recombiners for not only the design basis case, but the more limiting severe accident with up to 100 percent metal-water reaction. Therefore, the requirements for hydrogen recombiners as part of the ONS design basis are unnecessary and their removal from the design basis is justified. Additionally, elimination of the hydrogen recombiners from the Emergency Operating Instructions would simplify operator actions in the event of an accident and, therefore, would be a safety benefit. Consequently, pursuant to 10 CFR 50.12(a)(2)(ii), application of the regulation is not necessary to achieve the underlying purpose of the rule.

In the submittal, the licensee also requested an exemption from the functional requirement for hydrogen monitoring as promulgated in Part 50, Appendix E, Section VI, "Emergency Response Data System (ERDS)," or any commitments made in regard to NUREG-0737, Item II.F.1, Attachment 6, "Containment Hydrogen Monitor." In the Statement of Considerations for Appendix E to Part 50, the Commission stated that the ERDS data (which includes the continuous hydrogen monitors) provides the data required by the NRC to perform its role during an emergency. This conclusion is still valid for not only the staff but licensees. The major vendors' core damage assessment methodologies continue to include continuous hydrogen monitoring. Core damage assessment methodologies were reviewed by the staff in response to NUREG-0737, Item II.B.3(2)(a). Continuous hydrogen monitoring is needed to support a plant's emergency plan as described in 50.47(b)(9). Implementing documents such as Regulatory Guide (RG) 1.101, Revision 2, which endorsed NUREG-0654, and RG 1.101, Revision 3, which endorsed NEI-NESP-007, Revision 2 define the highest Emergency Action Level, a General Emergency, as a loss of any two barriers and potential loss of the third barrier.

Potential loss of a third barrier depends on whether or not an explosive mixture exists inside containment. The continuous hydrogen monitors are used for determining whether an explosive mixture exists inside containment. Therefore, the licensee's request for exemption from the functional requirements for hydrogen monitoring is not approved.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption pertaining to the recombiners is authorized by law, will not endanger life or property or common defense and security, and is, otherwise, in the public interest. Also, pursuant to 10 CFR 50.12(a)(2)(ii), special circumstances are present. Therefore, the Commission hereby grants Duke Energy Corporation an exemption from the recombiner requirements of 10 CFR 50.44 and 10 CFR Part 50, Appendix A, General Design Criterion 41 for the Oconee Nuclear Station, Units 1, 2, and 3.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (66 FR 37073).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 17th day of July 2001 .

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John A. Zwolinski, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SAFETY EVALUATION BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

HYDROGEN RECOMBINER EXEMPTION

DUKE ENERGY CORPORATION

OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3

DOCKET NOS. 50-269, 50-270, AND 50-287

INTRODUCTION

By letter dated July 26, 2000, Duke Energy Corporation (Duke), licensee for Oconee Nuclear Station, Units 1, 2, and 3 (ONS), requested an exemption to the requirements of 10 CFR 50.44, 10 CFR Part 50, Appendix A, General Design Criterion 41, and 10 CFR Part 50, Appendix E, Section VI. The purpose of the exemption request was to remove requirements for hydrogen control system recombiners from the ONS design basis. The proposed request for exemption also included amendment requests to remove the hydrogen control system from the ONS licenses, Technical Specifications (TS), and the Updated Final Safety Analysis Reports.

The staff does not support the licensee's request for an exemption from the functional requirement for hydrogen monitoring as promulgated in Part 50, Appendix E Section VI, "Emergency Response Data System (ERDS)," or any commitments made in regard to NUREG-0737, Item II.F.1, Attachment 6, "Containment Hydrogen Monitor." In the Statement of Considerations for Appendix E to Part 50, the Commission stated that the ERDS data (which includes the continuous hydrogen monitors) provides the data required by the NRC to perform its role during an emergency. This conclusion is still valid for not only the staff but licensees. The major vendors' core damage assessment methodologies continue to include continuous hydrogen monitoring. Core damage assessment methodologies were reviewed by the staff in response to NUREG-0737, Item II.B.3(2)(a). Continuous hydrogen monitoring is needed to support a plant's emergency plan as described in 50.47(b)(9). Implementing documents such as, Regulatory Guide (RG) 1.101, Revision 2, which endorsed NUREG-0654, and RG 1.101, Revision 3, which endorsed NEI-NESP-007, Revision 2 define the highest Emergency Action Level, a General Emergency, as a loss of any two barriers and potential loss of the third barrier. Potential loss of a third barrier depends on whether or not an explosive mixture exists inside containment. The continuous hydrogen monitors are used for determining whether an explosive mixture exists inside containment. Therefore, the staff does not support the licensee's request for exemption from the functional requirements for hydrogen monitoring or its removal from the ONS TS. Consequently, the licensee has withdrawn the proposed changes to the ONS TS. The remainder of this safety evaluation will address the combustible gas control system recombiner requirements as part of the design basis for ONS.

DISCUSSION AND EVALUATION

ONS Hydrogen Control System

The hydrogen recombiner system consists of a portable, external hydrogen recombiner, control panel for the recombiner, and piping. Two recombiners are normally maintained at ONS. Only one recombiner is required to be operable. The recombiner is capable of processing 90 standard cubic feet per minute (scfm) with a recombination efficiency of at least 95 percent for hydrogen concentrations of greater than 0.5 volume percent. The minimum required flow rate for the design basis loss of coolant accident (LOCA) is 50 scfm. The basic approach during an accident is to allow the hydrogen concentration to increase for a minimum of 7 days prior to placing the recombiner system in service to allow time for pressures and temperatures to decrease in the Reactor Building. Following the methodology of RG 1.7, the hydrogen concentrations are calculated not to reach 4 volume percent in the containment for 15 days after initiation of a design basis LOCA.

Regulatory Requirements For Combustible Gas Control Systems

Regulatory requirements for the hydrogen control system are specified in 10 CFR 50.44 and 10 CFR Part 50, Appendix A, (General Design Criteria 41, 42, and 43). Additional staff guidance is provided in RG 1.7. Staff review and acceptance criteria are specified in Section 6.2.5 of the Standard Review Plan. Different requirements apply to facilities according to the date of publication of the Notice of Hearing for the Construction Permit. With regard to combustible gas control system requirements, ONS is subject to the requirements of 10 CFR 50.44(g).

A combustible gas control system is defined by 50.44(h) as a system that operates after a LOCA to maintain the concentrations of combustible gases within the containment, such as hydrogen, below flammability limits. Combustible gas control systems are of two types: (1) systems that allow controlled release from the containment such as a purge system, and (2) systems that do not result in a significant release from the containment such as recombiners. The purpose of this exemption request is to remove requirements for hydrogen recombiners from the ONS design basis.

ONS is also subject to 10 CFR 50.44(d) that states :

> For facilities that are in compliance with Section 50.46(b), the amount of hydrogen contributed by core metal-water reaction (percentage of fuel cladding that reacts with water), as a result of degradation, but not total failure, of emergency core cooling functioning shall be assumed either to be five times the total amount of hydrogen calculated in demonstrating compliance with Section 50.46(b)(3), or to be the amount that would result from reaction of all the metal in the outside surfaces of the cladding cylinders surrounding the fuel (excluding the cladding surrounding the plenum volume) to a depth of 0.00023 inch (0.0058 mm), whichever amount is greater.

The amount of hydrogen described by 10 CFR 50.44(d) was clearly an attempt to address accident sequences beyond the design basis. As stated in the statement of considerations (41 FR 46467), and RG 1.7, a factor of five is intended to provide an appropriate safety margin against unpredicted events during the course of accidents. More specifically, it is designed to account for a more degraded condition of the reactor than the ECCS design basis permits. RG 1.7 assumes oxidation of up to 5 percent of the Zircalloy surrounding the active fuel. The amount of hydrogen due to radiolysis recommended by RG 1.7 assumes 50 percent of the halogens and 1 percent of the solids present in the core are intimately mixed with the coolant water, all noble gases are released to the containment, and all other fission products remain in the fuel rods.

Subsequent risk studies have shown that the majority of risk to the public is from accident sequences that lead to containment failure or bypass, and that the contribution to risk from accident sequences involving hydrogen combustion is actually quite small for large, dry containments. This is true despite the fact that the hydrogen produced in these events is substantially larger than the hydrogen production postulated by 50.44(d) and RG 1.7. Hydrogen combustion sequences that could lead to early containment failure typically involve up to 75 percent core metal-water reaction. Hydrogen combustion sequences that could lead to late containment failure involve additional sources of hydrogen due to the interaction of corium and the concrete basemat after vessel breach. Although the recombiners are effective in maintaining the RG 1.7 hydrogen concentration below the lower flammability limit of 4 volume percent for design basis events, they are overwhelmed by the larger quantities of hydrogen associated with severe accidents which are typically released over a much shorter time period (e.g., 2 hours).

The staff evaluated the risk from hydrogen combustion for the Zion Nuclear Station as part of NUREG-1150. Because the Zion containment was found to be quite strong by the structural experts who considered the issue, early containment failure due to hydrogen burns was not modeled for Zion. Figure 7.3 of NUREG-1150, Volume 1, dated December 1990 displays information in which the conditional probabilities of four accident progression bins, e.g., early containment failure, are presented for the Zion plant, which has a large, dry containment similar to ONS. This information indicates that the mean conditional probabilities for internal events are: (1) 0.014 for early containment failure; (2) 0.24 for late containment failure, which is mainly from basemat melt-through; (3) 0.006 for containment bypass from interfacing-system LOCA and induced steam generator tube rupture; and (4) 0.73 for no containment failure. The accident progression event trees used to generate these bins are described in NUREG/CR-4551, Volume 7, Revision 1, Part 1. NUREG/CR-4551 also states that hydrogen combustion in the period before vessel failure is now generally considered to present no threat to large, dry containments. Table A.4-5 of NUREG/CR-4551 shows that the contribution of hydrogen combustion to late containment failure is also very small (only 0.5 percent of the late containment failure bin (i.e., 8.376E-4) is from hydrogen combustion). Although the modeling of the accident progression event trees may have changed since 1990, the relative importance of hydrogen combustion for large, dry containments with respect to containment failure has not changed and continues to be quite low.

The ONS IPE concluded containment survival is almost certain following hydrogen combustion when the Reactor Building Cooling Units and the Reactor Building Spray System are operating. The licensee’s plant-specific containment integrity analysis for ONS indicates that the ultimate pressure capacity of the containment building is 140 psig, mean value (per ONS IPE, Section G). This estimate is reasonable when compared to Table 6.1 of NUREG/CR-6475, “Resolution of the Direct Containment Heating Issue for Combustion Engineering Plants and Babcock & Wilcox Plants.” A safety margin exists for containment integrity even for conservative hydrogen concentration levels. Table 2.6.1 of NUREG/CR-5662, “Hydrogen Combustion, Control, and

Value-Impact Analysis for PWR Dry Containments," June 1991, estimates the pressure for an adiabatic and complete hydrogen burn involving up to 75 percent core metal-water reaction to be 105 psig. Sequences involving up to 75 percent core metal-water reaction are expected to bound the majority of severe accident sequences including almost all that remain in-vessel. For sequences involving up to 100 percent core metal-water reaction, Table 2.6.1 estimated a pressure of 129 psig . These estimates are considered conservative because of the adiabatic assumption and the hydrogen burn is expected at much lower hydrogen concentrations than those assumed in the estimate, 13 and 16 percent, respectively. For example, the hydrogen burn during the accident at TMI-2 resulted from a hydrogen concentration of 8.1 percent. Therefore, the licensee's mean value estimate of the ultimate pressure capacity of the containment building bounds conservative estimates of the most likely hydrogen combustion modes.

Although hydrogen igniter systems would provide added margin that containment integrity can be maintained during hydrogen burns, Generic Issue (GI)-121, "Hydrogen Control for PWR Dry Containments," found that hydrogen combustion was not a significant threat to dry containments and concluded there was no basis for new generic hydrogen control measures (i.e., igniters).

From this information, the staff has concluded that the quantity of hydrogen prescribed by 10 CFR 50.44(d) and RG 1.7 that necessitated the need for hydrogen recombiners is bounded by the hydrogen generated during a severe accident. The staff finds that the relative importance of hydrogen combustion for large, dry containments with respect to containment failure to be quite low. This finding supports the argument that the hydrogen recombiners are not risk significant from a containment integrity perspective.

Analysis

As mentioned in the previous section, the risk associated with hydrogen combustion is not from design basis accidents but from severe accidents. The hydrogen recombiners are overwhelmed by the metal-water reaction and are incapable of removing appreciable amounts of hydrogen in the time period prior to ignition. The recombiners are, however, capable of preventing a subsequent hydrogen burn due to radiolytic decomposition of water and corrosion in the long term.

The staff has performed analyses of a plant with a large, dry containment similar to those at ONS. The purpose of these analyses was to ascertain the value of the hydrogen recombiners in preventing the uncontrolled burning of hydrogen in the long term under best estimate severe accident conditions versus the design basis case. The staff used its confirmatory code combustion gas analyzer program (COGAP) to estimate the amount of hydrogen due to radiolytic decomposition of water and corrosion. COGAP was developed by the staff for determining hydrogen concentrations within reactor containments following a design basis LOCA. The following are some of the input assumptions the staff changed to make the calculations more appropriate for a best estimate severe accident analysis: (1) the amount of solid fission product decay energy absorbed by the sump water solution was increased from 1 percent to 8 percent; (2) the iodine isotope decay energy absorbed by the sump water solution was increased from 50 percent to 75 percent; (3) the hydrogen yield was reduced from 0.5 molecule/100 ev to 0.4 molecule/100 ev; and (4) best estimate corrosion rates were assumed. The amount of solid fission product and iodine isotope decay energy was based on the release fractions in NUREG-1465 and the decay energy in NUREG/CR-4169. The corrosion rates were based on the proceedings of the Second International Conference on the Impact of Hydrogen on Water Reactor Safety, Albuquerque, New Mexico, October 1982. This analysis calculated the hydrogen concentration to be 5.4 percent at 30 days and did not exceed the lower flammability limit of 4 percent for 16 days.

Hydrogen concentrations on the order of 6 percent or less are clearly bounded by hydrogen generated during a severe accident and would not be a threat to containment integrity, as discussed in the previous section. Such a burn would impose a temperature transient on available instrumentation and equipment. In the range of 4 to 6 percent, the temperature transient is fairly benign because the rate of flame propagation is less than the rate of rise of the flammable mixture. Therefore, the flame can propagate upward, but not horizontally or downward. In this case, complete combustion will not occur until the concentration is increased above 6 percent.

Equipment survivability in concentrations greater than 6 percent was addressed as part of GI-121, which references NUREG/CR-5662 that assessed the benefits of hydrogen igniters. NUREG/CR-5662 concluded that simulated equipment can withstand a LOCA and single burn resulting from a 75 percent metal-water reaction in a large, dry containment. However, multiple containment burns due to the operation of ignition systems could pose a serious threat to safety-related equipment located in the source compartment. The multiple burn environment was found to be a potential threat because the source compartment temperature remains elevated from the previous burn. However, for ONS this is not a concern for the above radiolysis and corrosion case because there is ample time between burns to reduce elevated containment temperatures via containment heat removal systems. Therefore, an additional burn in the long term due to radiolysis and corrosion would not have a similar impact on equipment survivability at ONS.

Risk Reduction Due to Instruction Simplification

In a postulated LOCA, the ONS emergency operating instructions (EOIs) direct the control room operators to monitor and control the hydrogen concentration inside the containment after they have carried out the steps to maintain and control the higher priority critical safety functions. Key operator actions associated with the control of hydrogen include placing the hydrogen recombiners in operation at very low hydrogen concentration levels. These hydrogen control activities could distract operators from more important tasks in the early phases of accident mitigation and could have a negative impact on the higher priority critical operator actions. An exemption from hydrogen recombiner requirements will eliminate the need for these systems in the EOIs and, hence, simplify the EOIs. The staff still expects the licensee's severe accident management guidelines to address combustible gas control. The staff concludes that this simplification would be a safety benefit and, therefore, is acceptable.

CONCLUSION

The staff has established certain criteria that permit any license holder to request specific exemptions to its rules and regulations provided special circumstances exist. Special circumstances are identified in 10 CFR 50.12(a)(2). 10 CFR 50.12(a)(2)(ii) states, "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The underlying purpose of 10 CFR 50.44 is to show that, following a LOCA, an uncontrolled hydrogen-oxygen recombination would not take place, or that the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function. Based on the above analysis, which includes the staff's evaluation of the risk from hydrogen combustion, resolution of GI-121, "Hydrogen Control for PWR Dry Containments," and the ONS IPE, it has been demonstrated that the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function without credit for the hydrogen recombiners for not only the design basis case, but the more limiting severe accident with up to 100 percent metal-water reaction. Therefore, the staff has determined that the requirements for hydrogen recombiners as part of the ONS design basis are not necessary to achieve the underlying purpose of the rule (pursuant to 10 CFR 50.12(a)(2)(ii)) and their removal from the design basis is justified. Additionally, elimination of the hydrogen recombiners from the EOIs would be a simplification and a safety benefit. Therefore, the exemption request to remove the recombiner requirements from 10 CFR 50.44 and General Design Criteria 41 is acceptable. However, the exemption request to remove the functional requirements for hydrogen monitoring is not approved.

Principal Contributor: Mike Snodderly

Date: July 17, 2001

Oconee Nuclear Station

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