NUCLEAR UTILITY GROUP
ON EQUIPMENT QUALIFICATION

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Chief, Rules and Directives Branch
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U.S. Nuclear Regulatory Commission
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RE: Comments on Draft Regulatory Guide DG-1128, Proposed Revision 4 of Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" 70 Fed.Reg. 49,953 (August 25, 2005)

Ladies and Gentlemen:

In the referenced *Federal Register* Notice, the U.S. Nuclear Regulatory Commission ("NRC") Staff requested comments concerning proposed revisions to its regulatory guidance on criteria for accident monitoring instrumentation. 70 Fed.Reg. 49,953 (August 25, 2005). The comments provided herein are submitted on behalf of The Nuclear Utility Group on Equipment Qualification ("NUGEQ" or the "Group")[1]. In addition, the NUGEQ endorses and supports the comments submitted by the Nuclear Energy Institute ("NEI") on [later] 2005 and by [later].

According to the NRC, this revision endorses (with certain clarifying regulatory positions) IEEE Std. 497-2002, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations" and is intended for licensees of new nuclear power plants. Further, while previous revisions of this regulatory guide remain in effect for licensees of current operating reactors, these licensees may voluntarily use the criteria in this revised guide within certain constraints identified in a regulatory position.

The NUGEQ provides suggested modifications to the draft regulatory guidance to achieve clarity, to preserve the relevant current licensing basis ("CLB") for existing plants, and to permit safety and cost-beneficial use of the guidance by existing plants.

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[1] The NUGEQ is comprised of member electric utilities in the United States and Canada, including NRC licensees authorized to operate over 80 nuclear power reactors in the United States. The NUGEQ was formed in 1981 to address and monitor topics and issues related to equipment qualification, particularly with respect to the environmental qualification of electrical equipment pursuant to 10 C.F.R. § 50.49.

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COMMENTS

The NUGEQ agrees with the overall objectives of the proposed revision, including the use of guidance that is less prescriptive and that is based on the accident management functions of the individual variable types. We also agree with the use of performance-based criteria for the selection, performance, design, qualification, display, and quality assurance of accident monitoring variables with the criteria based on the accident management functions of the given type of variable. Further, we endorse NRC efforts to utilize industry standards when establishing regulatory positions.

As described more fully in the individual comments, the NUGEQ disagrees with the Staff's position limiting existing licensees' voluntary use the Revision 4 guidance to conversions of plants' entire accident monitoring programs to Revision 4. The NUGEQ also believes that when existing licensees elect to use Revision 4, certain criteria, in particular environmental and seismic qualification criteria, should reflect a plant's current licensing basis (CLB) and not necessarily the criteria in Revision 4 that more appropriately apply to future reactors. Comments and suggested revisions are described below.

1. Regulatory Position C(1)

The NUGEQ disagrees with this regulatory position if this position disallows use of the guidance in Revision 4 and IEEE 497 as a basis to justify selective changes to licensees' existing accident monitoring programs established in accordance with Revision 2 or 3. The draft position specifies that: "*If a current operating reactor licensee voluntarily converts to the criteria in Revision 4 of this guide, the licensee should perform the conversion on the plant's entire accident monitoring program to ensure a complete analysis.*" (emphasis added) The accompanying regulatory discussion suggests that such a complete conversion could include physical changes, licensing changes, and could have significant cost implications for current operating reactor licensees who decide to convert to the new standard under Revision 4.

The NUGEQ recommends allowing selective use of the guidance Revision 4 and IEEE 497 as a basis to justify changes to licensees' existing accident monitoring programs established in accordance with Revision 2 or 3. Such a use does not involve complete or partial program "conversion" but would permit licensees to seek changes to their accident monitoring CLB using a technical basis based on the Revision 4 guidance.

The NUGEQ believes this current draft regulatory position creates an artificial barrier limiting cost-effective, performance-based program improvements and is inconsistent with other NRC initiatives.[2] The NUGEQ notes that because IEEE 497 was revised to "*contain guidance and*

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[2] For example, selective application of an alternative source term pursuant to 10 C.F.R. § 50.67 is permitted, subject to certain constraints (see e.g., "Use of Alternative Source Terms at Operating Reactors," 64 Fed. Reg. 71990, 71994-95 (December 23, 1999).

allow a flexible basis for making changes to such systems in older plants" (IEEE 497 Introduction pg iii), this regulatory position is also inconsistent with this IEEE objective.

The stated basis for this regulatory position is that partial conversions could result in the "*potential for loss of variables or interactions with other variables without a complete analysis in accordance with this guide.*" Regarding this basis the NUGEQ believes this concern can be adequately addressed without requiring wholesale program and licensing changes to Revision 4. The NUGEQ notes that the five variable types and associated selection criteria described in IEEE 497 Clause 4, "Selection criteria" are consistent with the five variables types described in Regulatory Guide 1.97 Revisions 2 and 3. In fact, IEEE 497 states that; "*The selection criteria, if properly imposed, would result in a list of variables similar to that required by RG 1.97.*" Consequently, it is unlikely that selective use of the performance-based criteria in Revision 4 will result in inappropriate "*loss of variables or interactions with other variables.*"

For example, by using the selection criteria in IEEE 497, Clause 5, "Performance criteria" to examine the current variables in their accident monitoring programs, existing plants could establish a performance-based basis for the program variables that would not result in the loss of needed information. This use of the Revision 4 selection criteria should be permitted to justify changes to a few variables without requiring licensees to apply all the other IEEE 497 criteria, including design criteria (Clause 6) and Display Criteria (Clause 8), to all variables or expecting licensees to implement the significant design and licensing efforts and associated costs needed to revise the entire accident monitoring program to comply with Revision 4. Similar selective use of other Revision 4 criteria could be used to make performance-based improvements in existing accident monitoring programs.

Suggested text changes for Regulatory Position C(1)

NUGEQ recommends that Regulatory Position C(1) be modified to permit use of Revision 4 information to justify changes to existing programs that are based on Revisions 2 or 3. Accordingly, the existing "conversion" language should be revised or the following added to the regulatory position:

Licensees may use the guidance and criteria in Revision 4 as a basis to justify selective modifications to programs currently complying with Revision 2 or 3. Licensees should ensure that such program modifications do not result in unacceptable variable loss or interactions.

2. Regulatory Position C(2)

The NUGEQ agrees with the intent of Regulatory position #2 which relaxes the IEEE 497 requirement for instrumentation calibration during an accident. However, the NUGEQ believes that the intent is to provide such means during the required instrument duration (i.e., post-event operating time) and not necessarily for the full accident duration. For example, a particular Type A variable may only be required for 6 hours after certain DBAs. In this case

calibration or access may not be necessary since the duration of need (6 hours) is less than the equipment's normal calibration interval. This interpretation is consistent with the performance-based objectives of the guidance and recognizes that the required operating time for some variables, particularly Type A variables, may be less than the duration of the accident.

Suggested text changes for Regulatory Position C(2)

NUGEQ suggests the following revision to the Regulatory Position C(2) text which modifies IEEE 492 Clause 6.7:

"To the maximum extent possible, considering instrument accessibility, means shall be provided for maintaining instrument calibration during the ~~accident~~ required instrument duration."

3. Regulatory Position C(3)

The NUGEQ seeks clarification that the accident source terms defined by both TID-14844 and Regulatory Guide 1.183, "*Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*" meet the intent of "*a source term that shall consider a damaged core capable of surviving the accident environment.*" Existing plant CLBs use source terms based on TID-14844 or the AST to comply with the guidance contained in NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," and NUREG-0737, "Clarification of TMI Action Plan Requirements" with respect to accident monitoring instrumentation and other post-accident considerations, including NUREG-0737 II.B. 2 "Design Review Of Plant Shielding And Environmental Qualification of Equipment for Spaces/Systems which may be used in Postaccident Operations" and II. B. 3, "Postaccident Sampling Capability". Accordingly, these source terms represent a damaged core capable of surviving the accident environment.

Suggested text changes for Regulatory Position C(3)

NUGEQ suggests the follow be added to the discussion portion of Regulatory Position C(3):

> *"Regarding damaged core source terms, existing plants may use the guidance contained in TID-14844 or the AST as described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors".*

4. Regulatory Position C(4)

The NUGEQ disagrees with this regulatory position which effectively includes instrumentation associated with certain "contingency actions" within the scope of the accident

monitoring instrument program, in particular as Type A variables. This position is inconsistent with IEEE-492 and Regulatory Guide 1.97 Revisions 2 and 3 which all exclude such instrumentation associated with contingency actions from the scope of the accident monitoring instrumentation program. The NRC proposes a process whereby such contingency action instruments would initially be included in the list of instruments potentially in the program and then some would subsequently be excluded. The only NRC guidance regarding the exclusion process is an example; "*if the contingency action takes place beyond the plant's licensing basis.*"

The NUGEQ believes this regulatory position is unnecessary and confusing. In particular, it has the potential of diluting the significance of the Type A variables, that are appropriately required based on the plant accident analysis and design basis, by including other less important contingency action variables. IEEE 497 defines contingency actions as "*alternative actions taken to address unexpected responses of the plant or conditions beyond its licensing basis (for example, actions taken for multiple equipment failures).*" In Regulatory Position C(4) the NRC example suggests that contingency action variables can be excluded "*if the contingency action takes place beyond the plant's licensing basis.*" This position appears to involve circular logic since, by definition, contingency actions are beyond the plant's licensing basis, and, therefore, can be excluded. Alternatively, the NRC may interpret the IEEE contingency action definition to include "*alternative actions taken to address unexpected responses of the plant*" that are within the design basis. The NUGEQ believes that such actions and associated variables are already addressed under Type D variables and it is inappropriate to categorize such variables as Type A. Clause 4.4 states that such Type D variables indicate the performance of safety systems, auxiliary supporting features, and other systems necessary to achieve and maintain safe shutdown and are based, in part, on the contents of plant EPGs, EOPs, and AOPs. It is reasonable to expect such procedures to include variables associated with important actions taken to address unexpected plant responses.

In summary, the NUGEQ recommends deletion of Regulatory Position C(4) in order to minimize confusion, maintain appropriate consistency with Revisions 2 and 3 with regard to contingency actions, and prevent dilution of the Type A variable list.

5. New Regulatory Position C(4)

The environmental and seismic qualification discussions in IEEE 497 Clauses 7.1, 7.2, 7.3, and 7.4 should be amended in a regulatory position to specify that environmental and seismic qualification shall be in accordance with a plant's current licensing basis (CLB) and not IEEE 323-1983 and IEEE 344-1987 although these standard versions may be used as guidance.

Regarding environmental qualification, Clauses 7.1, 7.2, 7.3, and 7.4 currently state, in part, that Type A, B, C, and D variables shall be environmentally qualified for the particular accident's postulated environment at the installed location "*in accordance with IEEE Std 323-1983*". This may be appropriate for plants that have committed to the 1983 version of IEEE 323. However, the environmental qualification licensing basis for existing plants is 10 CFR 50.49, as clarified

by plant specific commitments and other NRC guidance documents, such as Regulatory Guide 1.89 Rev. 1, the DOR Guidelines, and NUREG-0588. For these operating plants IEEE 323-1983 is not typically identified as part of the CLB (termed LBD in IEEE 497). It is also noteworthy that IEEE 323-1983 has not been endorsed by a Regulatory Guide and has been superseded by IEEE 323-2003. Although some future plants may identify IEEE 323-1983 as part of the plant's CLB, it is more likely that such plants will reference IEEE 323-2003. Similar considerations apply to a plant's seismic CLB and IEEE 344-1987.

Suggested New Regulatory Position C(4)

NUGEQ suggests the following new regulatory position:

> *"The provisions of IEEE 497 Clauses 7.1, 7.2, 7.3, and 7.4 regarding environmental and seismic qualification shall be interpreted to mean that environmental and seismic qualification of accident monitoring variables shall be in accordance with a plant's current licensing basis (CLB); the information in IEEE 323-1983 and IEEE 344-1987 (if not part of the CLB) may be* considered if appropriately justified and consistent with current regulatory practice."

6. New Regulatory Position C(5)

The NUGEQ agrees with IEEE 497 Clause 5.4 that the operating time of each variable shall be defined and addressed in the qualification program. Further, the NUGEQ agrees that these times shall be based on a plant's CLB (referred to as the LBD by IEEE 497). However, the NUGEQ disagrees with the standard's guidance in Clause 5.4 c) regarding a minimum 100 day operating time for Type C variables, particularly when this time conflicts with a plant's CLB. Although 100 days may be appropriate and consistent with the design basis for future plants, a significant number of existing plants have established shorter environmental qualification program operating times (e.g., 30 days) for Type C variables. For any existing plants seeking to use Revision 4 as the basis for their accident monitoring instrumentation, their CLB should be preserved. The NUGEQ has also been unable to identify a technical basis for the 100 days duration and believes that other CLB durations, including 30 days, are equally justifiable.

Finally, The NUGEQ believes there is an inconsistency in Clause 5.4 c) regarding Type C variables. Currently, the clause specifies a 100 day operating time for variables monitoring the fuel cladding, reactor coolant system pressure boundary, and containment pressure boundary fission product barriers and then states that the duration for "other" Type C variables is that required by the plant's CLB. However, because Clause 4.3 "Type C variables" defines Type C variables as only those monitoring the fuel cladding, reactor coolant system pressure boundary, and containment pressure boundary fission product barriers there cannot be any "other" Type C variables.

All these NUGEQ concerns can be resolved by applying the guidance in the last sentence in Clause 5.4 c) to all Type C variables. Simply stated the qualification duration for all Type C variable instrument channels should be the duration for which the measured variable is required by the plant's LBD.

Suggested New Regulatory Position C(6)

NUGEQ suggests the following new regulatory position:

Replace the current contents of Clause 5.4 c) with the following: "The qualification duration for Type C variable instrument channels shall be the duration for which the measured variable is required by the plant's LBD."

7. "Not Intended for Current Operating Plants" language

In Regulatory Position C(1) and in the Regulatory Analysis, page 13, DG-1128 states: "Therefore, Revision 4 is not intended for current operating reactor licensees." Since Regulatory Position C(1) specifically permits use of Revision 4 with certain constraints by existing plants these statements are incorrect and can be confusing. While it may be more appropriate to state that "Revision 4 was primarily intended for future reactor licensees", it would be equally appropriate to delete these statements. The NUGEQ recommends deletion of these two statements without substitution.

CONCLUSION

We appreciate the opportunity to comment on this proposed regulatory guide revision. If you have any questions regarding NUGEQ's comments, please contact us.

Sincerely,

William A. Horin
Counsel to NUGEQ