

NRCREP Resource

From: BELL, Denise [dxb@nei.org] on behalf of RILEY, Jim [jhr@nei.org]
Sent: Friday, December 19, 2008 3:58 PM
Subject: Comments on Draft Regulatory Guide DG-1205, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems"
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December 19, 2008

Rulemaking, Directives, and Editing Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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Subject: Comments on Draft Regulatory Guide DG-1205, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems," 73 Federal Register 63212 (October 24, 2008) and Corresponding NRC Staff Draft Final Rule Language.

Project Number: 689

Dear Sir or Madame:

On October 24, 2008, the NRC issued a Federal Register notice (73 FR 63212) soliciting public comments on DG-1205, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems". The draft Regulatory Guide DG-1205 is proposed Revision 1 of Regulatory Guide 1.47. DG-1205 describes a method that the staff of the NRC considers acceptable for use in complying with the NRC's regulations with respect to bypassed and inoperable status indication for nuclear power plant safety systems.

The Nuclear Energy Institute (NEI) has solicited comments from the industry on the subject draft Regulatory Guide and appreciates the opportunity to submit the comments in the attached pages.

If you have any questions, please contact me at (202) 739-8137; jhr@nei.org or Gordon Cleifton at (202) 739-8086; gac@nei.org.

Sincerely,

James H. Riley

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SUNSI Review Complete
Open letter = ADM-013

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E-RJDS = ADM-23
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Sincerely,

A handwritten signature in black ink that reads "James H. Riley". The signature is written in a cursive, flowing style.

James H. Riley

**Comments on Draft Regulatory Guide DG-1205,
"Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems,"**

General Comments/Discussion

Comment 1:

This draft Regulatory Guide DG-1205 creates confusion in the safety classification of the Bypassed and Inoperable Status Indication (BISI) system. Page 4 of the guide states: "Clause 5.8.3.1 of IEEE Std. 603-1991 states that "this display instrumentation need not be part of the safety systems." The indication system should be designed and installed in a manner that precludes the possibility of adverse effects on plant safety systems." However, the guide follows on page 5 with an extensive discussion on conformance with criteria established for safety systems such as single failure, independence, and qualification would apply: "Therefore, if the bypassed and inoperable status indication is used for both safety and non-safety functions, then the indication system will require classification as part of safety systems."

IEEE Standard 603-1991 is a general standard for safety systems. IEEE Standard 603-1991, Clause 5.6.3.1(1), states that "equipment that is used for both safety and non-safety functions be classified as part of the safety systems". IEEE Standard 603-1991 defines a **safety function** as follows:

safety function. One of the processes or conditions (for example, emergency negative reactivity insertion, post-accident heat removal, emergency core cooling, post-accident radioactivity removal, and containment isolation) essential to maintain plant parameters within acceptable limits established for a design basis event.

NOTE: A safety function is achieved by the completion of all required protective actions by the reactor trip system or the engineered safety features concurrent with the completion of all required protective actions by the auxiliary supporting features, or both. (See Appendix A for an illustrative example.)

A typical bypass or inoperable indication would not meet this definition of a **safety function**. Thus, it is considered that Clause 5.6.3.1(1) of IEEE Standard 603-1991 is not necessarily intended to apply to a bypass or inoperable indication since such indications do not perform a safety function, and that such indications would normally not be considered part of the safety system with associated single failure requirements.

This interpretation is further supported on page 4 of the draft Regulatory Guide by referencing IEEE 603-1991, Clause 5.8.3.1, which specifically takes exception to the safety system bypass indication being classified as part of the safety system by stating: "This display instrumentation need not be part of the safety systems."

An additional concern for applying single failure criteria to bypass and inoperable status indication is highlighted when considering redundancy of safety system divisions. Safety systems address single failure criteria by the use of redundant divisions, any one of which can fail and not prevent the safety system from performing its safety function. Each division by itself cannot meet the single

failure criteria. The application of single failure criteria to the status indication of a single division appears to be inconsistent with the fact that the monitored division cannot meet the single failure criteria.

The bypassed and inoperable status indication is not required to perform any safety related functions; however, additional consideration for classification of the indication as part of the safety system could be necessary if an automatic action or immediate operator action were necessitated based solely on activation or deactivation of the bypass indication.

Comment 2:

This draft Regulatory Guide DG-1205 endorses the IEEE Standard 603-1991 in place of IEEE Standard 279-1971. The IEEE Standard 603-1991 provides less specific information regarding the bypass and inoperable status indication than IEEE Standard 279-1971; thus, this draft Regulatory Guide DG-1205 leaves plants committed to IEEE Standard 279-1971 in their licensing basis without proper guidance on future digital upgrades of the bypass and inoperable status indication design. Significant differences exist between these two IEEE Standards in terminology and design criteria:

- Clause 4.13 of IEEE Standard 279-1971 requires in part that, if the protective action of some part of the protection system has been bypassed or deliberately rendered inoperable for any purpose, this fact shall be continuously indicated in the control room.
- Clause 5.8.3 of IEEE Standard 603-1991 requires that, if the protective actions of some part of a safety system have been bypassed or deliberately rendered inoperative for any purpose other than an operating bypass, continued indication of this fact for each affected safety group shall be provided in the control room.

This proposed loss of guidance could be maintained by preserving guidance on the bypass and inoperable status indication for IEEE Standard 279-1971 based plants.

Comment 3:

The draft Regulatory Guide DG-1205 Regulatory Position item 6 on page 6 states that “Bypass and inoperable status indicators should be designed and installed in a manner that precludes the possibility of adverse effects on plant safety systems. The indicator system should not be used to perform functions that are essential to safety, unless it is designed in conformance with criteria established for safety systems.” Typically, the bypass and inoperable status indication system of the automatically actuated components is part of an integrated plant computer system. This computer system does not perform any functions that are essential to safety. It is an aid to the operator in the determination of the bypassed or inoperable status of protective systems. Operator actions are not expected based solely on the abnormal status indication.

Recommended Changes

It is recommended that the NRC consider eliminating the discussion on conformance with single failure criteria and other qualification requirements to avoid confusion in meeting RG-1.47 guidance in the design of the bypassed and inoperable status indication system.

All parts of the draft Regulatory Guide DG-1205 should be consistent with the discussions on page 5 related to interpretation of the IEEE Standard 603-1991 and classification of the bypass indication as a part of the safety system. The following specific comments related to the above discussion are recommended.

1. Recommend revision of the first paragraph on page 5 of draft Regulatory Guide DG-1205 to read:
"However, Clause 5.6.3.1(1) of IEEE Standard 603-1991 specifies that "equipment that is used for both safety and nonsafety functions shall be classified as part of the safety systems." Although a status indication by definition would not be used to perform safety functions (as defined by IEEE Standard 603-1991) and it generally needs not be classified as part of the safety systems, activation or deactivation of such an indication could be used as an alert to the operator of the need to perform immediate actions related to the safety system per administrative procedures. If operator action is based solely on the bypass indication, and this action is required to maintain the integrity of the safety systems, then the indication should be classified as part of the safety system and the following paragraphs addressing single failure, independence, and qualification would apply."

2. Recommend additional revisions to page 5 of draft Regulatory Guide DG-1205 as follows:

First sentence of second paragraph on Page 5 – revise as shown:

If bypass and inoperable status indication is used for a safety function, then the single-failure criterion of IEEE Standard 603-1991, Clause 5.1, would apply to the indication system.

First sentence of third paragraph on Page 5 – revise as shown:

In addition to meeting the single-failure criterion, if bypass and inoperable status indication is used for a safety function, then maintaining independence between redundant portions of the safety system is essential to the effective utilization of the single-failure criterion.

First sentence of fourth paragraph on Page 5 – revise as shown:

If bypass and inoperable status indication is used for a safety function, the equipment qualification criterion of IEEE Standard 603-1991, Clause 5.4, would apply to the indication system.

It is recommended that the draft Regulatory Guide preserve the existing guidance on the bypass and inoperable status indication and include a discussion of its regulatory position with regard to partial digital upgrade for IEEE Standard 279-1971 based plants.