



**Energy Measurements Group • San Ramon Operations**

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2 July 1980  
ESD #6869

Mr. J. T. Beard  
US Nuclear Regulatory Commission  
Division of Operating Reactors  
Plant Systems Branch - MS-416  
7920 Norfolk Avenue  
Bethesda, MD 20014

Dear J.T.:

Attached is the Selected Issues Program work methodology which we revised per our phone conversation of 30 June 1980. Please review this transmittal as soon as possible as we will proceed in accordance with this revision. We are revising the requests for further information which have not yet been fulfilled. They will be forwarded to you as they are completed. I will be contacting you in a few days for your comments.

*Bill Kountanis*

BILL KOUNTANIS  
ENGINEERING SPECIALIST

BK:lc  
Attachment

cc: EG&G/SRO

LLNL

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## SELECTED ISSUES PROGRAM

### I. INTRODUCTION

Several instances have been reported where automatic closure of the containment ventilation/purge valves would not have occurred because the safety actuation signals were either manually overridden or blocked during normal plant operations. These events resulted from procedural inadequacies, design deficiencies, and lack of proper management controls. These events also brought into question the mechanical operability of the containment isolation valves themselves. These events were determined by the U.S. Nuclear Regulatory Commission (NRC) to be an Abnormal Occurrence (#78-5) and were, accordingly, reported to the U.S. Congress.

As a follow-up on this Abnormal Occurrence, the NRC staff is reviewing the electrical override aspects and the mechanical operability aspects of containment purging for all operating power reactors. On November 28, 1978, the NRC issued a letter entitled "Containment Purging During Normal Plant Operation" to all boiling water reactor (BWR) and pressurized water reactor (PWR) licensees. The licensees were instructed to provide data for evaluation of compliance with the established review criteria. (Transmittals and pertinent communications are documented in this paragraph.)

This document addresses only the electrical, instrumentation, and control (EI&C) design aspects of the containment ventilation isolation (CVI) and other engineered safety features (ESF's).

### II. REVIEW CRITERIA

The primary intent of this evaluation is to determine that the following requirements are met for the safety signals to all ESF equipment.

- A. Criterion no. 1--In keeping with the requirements of GDC 55 and 56, the overriding\* of one type of safety actuation signal (e.g., radiation) should not cause the blocking of any other type of safety actuation signal (e.g., pressure) for those valves that have no function besides containment isolation.
- B. Criterion no. 2--Sufficient physical features (e.g., key-lock switches) are to be provided to facilitate adequate administrative controls.
- C. Criterion no. 3--The system-level annunciation of the overridden status should be provided for every safety system impacted when any override is active (see R.G. 1.47).

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\*The following definition is given for clarity of use in this evaluation:

Override: The signal is still present, and it is blocked in order to perform a function contrary to the signal.

Incidental to this review, the following additional NRC staff design criteria were used in the evaluation:

- A. Criterion no. 4--Diverse signals should be provided to initiate isolation of the containment ventilation system. Specifically, containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation) should automatically initiate CVI.
- B. Criterion no. 5--The instrumentation and control systems provided to initiate the ESF should be designed and qualified as safety-grade equipment.
- C. Criterion no. 6--The overriding or resetting\* of the ESF actuation signal should not cause any valve or damper to change position.

Criterion 6 in this review applies primarily to related ESF systems because implementation of this criterion for containment isolation systems will be reviewed by the Lessons Learned Task Force, based on the recommendations in NUREG 0578, Section 2.1.4. Automatic valve repositioning upon reset may be acceptable when containment isolation is not involved; consideration will be given on a case-by-case basis. Acceptability would be dependent upon system function, design intent, and suitable operating procedures.

### III. REVIEW GUIDELINES (CVI)

- A. Provide brief description of the CVI system. Include all automatic and manual signals initiating CVI.
- B. Verify that the CVI system meets the requirements of review criteria detailed in Section II by using drawings and other documents as required. State briefly why the system does or does not meet each of the criteria 1, 2, 3, 4 and 6.
- C. Verify that the CVI system complies with criterion 5 using the following guidelines:
  - 1. Ask the licensee by letter if the CVI system equipment is safety-grade equipment as defined in IEEE-279-71 sections 4.3, "Quality of Components and Modules", and 4.4, "Equipment Qualification", and qualified per IEEE Standards 323 and 344.
  - 2. Review CVI actuation circuits and verify that the equipment is safety-grade per paragraph C.1.

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\*The following definition is given for clarity of use in this evaluation:

Reset: The signal has come and gone, and the circuit is being cleared in order to return it to the normal condition.

3. If documents which are provided are not adequate for evaluation, set up a conference call with NRC and licensee. The content of discussion should cover the items in paragraph C.1.
4. Integrate licensee's verbal inputs and reviewer's technical evaluation and conclude whether CVI equipment does or does not comply with criterion 5.

#### IV. REVIEW GUIDELINES (ESF)

##### A. Provide a brief description of one of the following FSF systems:

1. Containment Spray (CS)
2. Containment Isolation (CI)
- 3) Control Room Isolation

##### B. Verify, using drawings and other documents, that the selected ESF system meets the requirements of review criteria detailed in Section II. State briefly why the selected system does or does not meet each of the criteria 1, 2, 3, 4 and 6.

##### C. Verify that the selected ESF system complies with criterion 5 using the following guidelines:

1. Ask the licensee by letter if the selected ESF system equipment is safety-grade equipment as defined in the IEEE-279-71 sections 4.3, "Quality of Components and Modules", and 4.4, "Equipment Qualification", and qualified per IEEE Standards 323 and 344.
2. Review the selected ESF actuation circuits and verify that the equipment is safety-grade per paragraph C.1.
3. If documents which are provided are not adequate for evaluation, set up a conference call with NRC and licensee. The content of discussion should cover the items in paragraph C.1.
4. Integrate licensee's verbal inputs and reviewer's technical evaluation and conclude whether the selected ESF system equipment does or does not comply with criterion 5.

#### V. SUMMARY

Provide a brief description of conclusions.

#### VI. REFERENCES

List all reference material used for the evaluation.

VII. FORMAT

A special format will not be required for the licensee's response unless the reviewer has a requirement for such format.

VIII. SUBMITTAL

Requests for information, contacts with the licensee, and submittal of reports will be routed through the office of J. T. Beard or Paul Shemanski.