

Millstone Unit III uses other qualified items other than those appearing on the Class 1E Master List. These items are not identified by unique equipment ID because of their extensive usage throughout the plant. These items have been qualified to the worst case environmental condition (inside containment) to support their usage for anywhere at Millstone Unit III.

The following list of items are used by construction through engineering disposition in order to ensure that their intended application is justified. The supporting documentation can be found filed under Specification 2400.000-350.

1. Raychem Heat Shrink Tubing (WCFS-N)
2. Marathon Terminal Blocks (1500/1600-N series)  
(Terminal Blocks are used only outside of containment for Class 1E circuits)
3. General Electric SIS Vulkene Supreme Wire
4. ITT Supernaut SIS Wire
5. Anaconda SIS Wire
6. Rockbestos Firewall III SIS Wire
7. Brand-Rex SIS Wire

Millstone Unit III also utilizes only qualified cable. This cable, like the above mentioned items, does not have a unique equipment ID found on the Class 1E Master List.

The following is a list of cable suppliers for cable found at Millstone Unit III:

- |                                |              |
|--------------------------------|--------------|
| 1) Anaconda                    |              |
| A) High temperature cable      | 2412.400-694 |
| 2) Boston Insulated Wire       |              |
| A) 600 V Instrument Cable      | 2412.400-255 |
| B) Triaxial Cable              | 2412.400-257 |
| C) Thermocouple Extension Wire | 2412.400-258 |
| 3) Kerite                      |              |
| A) 1000 V Power Cable          | 2412.300-253 |
| B) 5000 V Power Cable          | 2412.300-239 |
| C) 8000 V Power Cable          | 2412.300-239 |
| 4) Okonite                     |              |
| A) 1000 V Control Cable        | 2412.400-645 |

These cables are used extensively throughout the plant and are qualified for the worst case environmental condition (inside containment).

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been qualified to the dose resulting from a fuel handling accident.

#### 2.1.6 Margins (NUREG-0588 Item 3.)

The analysis from which the qualification envelopes are constructed is inherently conservative. Assumptions regarding initial conditions and various other inputs typically are made to maximize the parameter of interest.

The containment pressure/temperature envelope curves are composites developed from environmental transients for several LOCAs and MSLBs. The enveloping procedure increases both the temperature/pressure peaks and the time spans. The resulting envelope curve is significantly more conservative than any single curve.

The HELB envelopes developed for building zones outside containment were constructed in a similar manner to those for inside containment. Where multiple break cases exist, composite envelopes are developed. Additional margin is added in constructing the envelope.

A significant margin exists in the spray environment pH specified for equipment inside containment. The maximum calculated pH of the spray environment is 8.3; 10.5 is specified on the equipment specification data sheets.

For the radiation doses, a safety margin of two has been applied to all the accident doses. Except as noted on the SCEWs, the equipment has been qualified to the maximum dose in the applicable area. Location specific doses are generally much lower. One percent failed fuel has been considered for normal operation doses which is significantly greater than the expected amount of fuel failure.

## 2.2 IDENTIFICATION OF SYSTEMS

### 2.2.1 System Safety Functions

As part of the evaluation of environmental qualification of Class 1E equipment, systems have been categorized in terms of the following safety functions:

1. Emergency reactor shutdown
2. Containment isolation
3. Reactor core cooling
4. Containment heat removal
5. Core residual heat removal
6. Prevention of significant release of radioactive material to the environment

## 7. Support and other equipment

This categorization is shown in Table 2-1.

System and building abbreviation codes used on the master list are listed in Table 2-2 and are also included under the worksheet tab of the Worksheets book for ease of reference.

### 2.2.2 Operating Time Considerations

Qualification operating times have been chosen based on the length of time equipment must perform its safety function when subjected to the limiting environmental conditions.

### 2.2.3 Methodology - Evaluation of Electrical Equipment

The qualification program includes all safety-related electrical (Class 1E) equipment which must function to mitigate the consequences of an accident. To implement the program, each specification/purchase order containing safety-related electrical equipment was identified, and qualification program requirements were placed on each vendor for applicable equipment. Qualification program requirements were also implemented for field purchased items, such as cables. Vendor programs were evaluated using the steps illustrated on the Environmental Qualification Review Flowchart (Figure 2-1). Checklists were developed to provide a systematic review of all aspects of a vendor's qualification test report.

In addition, the components of each system were reviewed on the basis of the system safety functions identified in Section 2.3. The result was a list, by system, of equipment required for inclusion in the qualification program. The system list was correlated with the equipment list by specification, thus assuring the inclusion of all required equipment in the qualification program.

The qualification goal of the program was to qualify each item of identified equipment for the most severe environment for location of the equipment, regardless of safety function. Thus, an equipment item outside containment, required to function for only LOCA, is nevertheless qualified for a high energy line break environment. Segregation of system safety function and environments was only used where qualification to the maximum environment could not be attained. If qualification could not be obtained, an evaluation was performed to demonstrate that failure of such equipment would not be detrimental to plant safety or accident mitigation or mislead the operator.

### 2.2.4 Qualification Documentation Review

Qualification documentation review is a joint effort between NUSCo and SWEC. A review is conducted on each procurement specification that identifies EEQ devices (equipment).

The review consists of the following steps:

INTEROFFICE MEMORANDUM

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SUBJECT Millstone 3 EEQ Report,  
Revision 2

J.O. OR  
W.O. NO.

DATE August 30, 1985

FROM WFEmerison

CC AMWalker

TO

1 Director, Nuclear Reactor  
Regulation  
U.S. Nuclear Regulatory  
Commission  
7920 Norfolk Avenue  
Bethesda, MD 20014  
ATTN: DOCUMENT CONTROL DESK

The attached pages constitute Revision 2 to the Millstone 3 Environmental Qualification of Electrical Equipment Report.

Please insert Table 1-1 (page 25) in your manual after pages 23/24.

Also, remove from your manual pages 2-5/2-6 and insert the attached replacement copies in their place.

This memorandum should be filed behind the frontispiece in your volume in front of any existing letters or instructions.

Thank you.

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