



# VERMONT YANKEE NUCLEAR POWER CORPORATION

## ATTACHMENT A

### GENERAL

Vermont Yankee has determined that there are a total of 332 HFA relays performing safety related functions in our plant. Of the 332 relays, there are 321 HFA relays located in the Control Room (145 AC and 176 DC). One Hundred and thirty-six (136) relays (all AC actuated) perform functions associated with the Reactor Protection System (RPS). None of the remaining 9 AC relays are normally energized in safety-related systems.

To date, 89 of the 136 AC coils in the RPS have been replaced with the Century Series. Of the remaining 47 AC coils, 40 have been replaced (1980 and 1983) with coils other than Century series. None of the DC coils have been replaced.

The seven (7) relays with normally energized AC coils which have never been replaced will be replaced during our current outage with the Century Series. The remaining forty (40) relays with normally energized AC coils which were replaced previously but not with the Century Series and the 176 safety-related DC relays, will have their coils changed to the Century Series during our outage scheduled to start in September 1985.

The remaining eleven (11) HFA relays are located outside the control room and are not normally energized.

The specific concerns of IE Bulletin 84-02 and Vermont Yankee's associated responses are as follows:

Item 1a Develop plans and schedules for replacing, (1) nylon or Lexan coil spool-type HFA relays used in normally energized safety-related applications and, (2) nylon coil spool-type HFA relays used in normally de-energized safety-related applications. The replacement relays and any replacements made in the future should meet the requirements of the applicable IEEE standards. The replacement program for energized and de-energized relays should be performed on a "best efforts" basis during plant outages of sufficient duration. The entire replacement program should be completed within two years from the date of this Bulletin.

### RESPONSE

1984 Outage: The seven (7) AC HFA relay coils in the Control Room that have not been previously replaced (either with Lexan or Century material) will be replaced with the Century Series.

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1985 Outage: All safety-related HFA coils having cores of Lexan or nylon will  
(Scheduled be replaced with coils of Century Series material.  
for 9/85)

Item 1b During the period before relay replacement, develop and implement surveillance plans that include:

- 1) Monthly functional tests of all reactor trip system normally energized relays that verify relay contacts change state when the relay coil is de-energized.
- 2) Visual inspections of all safety-related normally energized relays as soon as practical upon receipt of this Bulletin. Thereafter, similar inspections should be accomplished in conjunction with the monthly functional test. These visual inspections should verify that relay coils are not deteriorating (e.g., inspect coil bobbins for visible cracks or melting), and should confirm cleanliness of the relay pole pieces.

RESPONSE

1. Our present monthly surveillance check of the RPS up to and including the generation of half scrams verifies that the necessary relays operate to assure a reactor trip.
2. All safety-related AC and DC HFA relays (with non-Century Series coils) will be visually inspected for coil deterioration and cleanliness of relay pole pieces during our June 1984 outage. Logic relays are checked for proper action in other systems monthly under the program described above. ECCS logic is verified where required by Tech Specs on a six-month schedule. Based on this and our past experience with HFA relays, we feel that any additional increased surveillance is not justified.

Item 1c Provide a basis for continuing operation for the period of time until the normally energized relays are replaced. This basis should include a discussion of those measures addressed in Item 1a and 1b and any other preventive and/or corrective measures taken or planned.

RESPONSE

Following our June 1984 outage, all AC HFA relays in the RPS will have been replaced (whether with Lexan, nylon or Century cored coils) within the past four years. As such, problems associated with an accelerated end-life of 10 to 12 years will not be expected. DC HFA relays, although still of concern, have not exhibited the failure rates characterized by the AC relays.

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A review of relays in other safety-related systems has indicated that no HFA relays are normally energized. Further, routine functional testing as well as visual inspection provides assurance that all safety-related HFA relays will perform their intended function. We therefore conclude that safe operation can be maintained until all affected relay coils are replaced.

The general concern of accelerated coil end life has been reviewed relative to relays other than the HFA type specifically mentioned in Bulletin 84-02. It has been concluded that although (in over 11 years of operation) failures associated with normally energized relay coils have occurred, their frequency is not such that further concern is warranted. It should be noted that in the majority of safety-related applications where normally energized relays are required, Vermont Yankee utilizes HFA relays.

Based on the above discussion, Vermont Yankee believes that the concerns of IE Bulletin 84-02 have been adequately addressed.

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