

Attachment A
Response to NRCB 93-02, Supplement 1

The following is Vermont Yankee's response to the requested interim actions described in NRCB 93-02, Supplement 1:

Action Requested

Provide training and briefings to apprise operators and other appropriate emergency response personnel of the information contained herein and in the referenced information notices regarding the potential for suppression pool strainer clogging.

VY Response

The Operations Manager issued the BWROG's "Operator Guidance for Potential Blockage of ECCS Suction Strainers" to apprise operators of concerns with potential ECCS suction strainer plugging and potential mitigative actions.

In addition, this guidance as well as the Bulletin and information contained in the BWROG's "Safety Assessment - BWR Emergency Core Cooling System Suction Strainers", were utilized to develop an instruction module and simulator scenario to be utilized during operator requalification training (LOR 94.01). This training will be completed by May 20, 1994. LOR cycle 94.02 will include training on the proposed new off-normal procedure described below. This training will be completed by July 22, 1994.

Appropriate emergency response personnel will receive training on this subject via the continuing Engineering Support Personnel (ESP) training program. This training will be completed by June 17, 1994.

Action Requested

Assure that the emergency operating procedures make the operator aware of possible indications of ECCS strainer clogging and provide guidance on mitigation.

Response

A combination of training, system operating procedures (OPs), and a new event-based off-normal operating procedure ON 3164 will be used to satisfy the requested action. In accordance with VYAP-0037, "Plant Procedures", an ON is used to address conditions resulting from system equipment malfunctions. This off-normal procedure will be drafted and made effective by May 27, 1994. Training on this procedure will be performed during operator requalification training (LOR 94.02). This training will be completed by July 22, 1994.

The new event-based procedure will address the following:

The operating conditions and parameter changes which would identify potential plugging of ECCS suction strainers including;

- ECCS flow rate less than expected for the current operating conditions
- Decreased suction pressure as indicated by local instrumentation
- Pump motor amperage indications erratic or decreasing

- Erratic and significant fluctuations in pump discharge pressure
- inability to control and maintain RPV and containment parameters (i.e., temperature, pressure, level)

The operator actions and initiation of activities required to stop the degradation of conditions and/or mitigate their consequences including;

- Secure from service, or throttle flow from the susceptible ECCS systems not needed to restore and maintain EOP parameters
- Align Core Spray suction to the CST one loop at a time, conditions permitting
- Initiate makeup to the CST; contact maintenance for assistance in providing additional makeup capability

Action Requested

Institute procedures and other measures to provide compensatory actions to prevent, delay, or mitigate a loss of available NPSH margin under LOCA conditions. Such measures should be consistent with providing the design basis emergency system functions for core and containment cooling. Actions to assure sufficient core and containment cooling may include:

- Reduction of flow (consistent with delivering the required ECCS flow) through the strainers to reduce head loss and extend the time for debris deposition
- Operator realignment of existing systems to allow backflushing of clogged strainers
- Operator realignment of existing systems to allow injection to the core from water sources other than the suppression pool
- Intermittent operation of the containment sprays, when possible, to reduce the transport of debris to the strainers
- Other plant-specific measures which assure availability of sufficient core and containment cooling to meet the design basis of the plant

Response

The following is Vermont Yankee's position on each of the above suggested compensatory actions:

Reduction of flow (consistent with delivering the required ECCS flow) through the strainers to reduce head loss and extend the time for debris deposition

The new off-normal operating procedure (ON 3164) will provide direction to the operator consistent with this objective.

Operator realignment of existing systems to allow backflushing of clogged strainers

This action is not possible since Vermont Yankee's existing systems cannot be realigned to provide an effective means for backflushing of clogged suction strainers.

Operator realignment of existing systems to allow injection to the core from water sources other than the suppression pool

Most of the preferred injection sources identified in the Emergency Operating Procedures (EOPs) have suction sources external to the suppression pool (i.e., condensate/feedwater, HPCI, RCIC, CRD, and Core Spray). The new off-normal operating procedure (ON 3164) will provide direction to the operator for realignment when conditions warrant this action. In addition, the new procedure will direct the operator to initiate action for augmenting normal makeup capability to the CST. This should prolong the usefulness of HPCI and RCIC, other operating conditions permitting. In addition, it should ensure long-term availability for the Core Spray subsystems when aligned to the CST. If the preferred sources are inadequate or unavailable, the EOPs direct the operator to utilize alternate injection systems to restore and maintain level. These alternate injection systems include the RHR Service Water System, the Fire Protection System, and the Condensate Transfer System, all of which utilize suction sources external to the suppression pool.

Intermittent operation of the containment sprays, when possible, to reduce the transport of debris to the strainers

The EOPs direct the operator to operate containment sprays when necessary to maintain drywell temperature and pressure below the limits specified in the Emergency Procedure Guidelines. Operation of the containment sprays in accordance with the guidance provided by the EOPs may result in intermittent operation of the sprays, depending upon the specific accident conditions. The current procedures require initiation of drywell sprays when pressure is above 14 psig. (to preclude cyclic oscillation (i.e., chugging) at the downcomer openings of the drywell vents), and termination when pressure is less than 2.5 psig. (to permit resetting of PCIS and RPS high drywell pressure logic).

Other plant-specific measures which assure availability of sufficient core and containment cooling to meet the design basis of the plant

As described above, Vermont Yankee has a number of normal and alternate methods for assuring adequate core cooling in the event conditions occur which result in debris generation and deposition on the ECCS suction strainers.