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BVY 10-059

November 8, 2010

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Technical Specifications Proposed Change No. 294
Elimination of Provisions Allowing HPCI and RCIC Suctions to be Aligned to the Suppression Pool
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

Dear Sir or Madam:

In accordance with 10CFR50.90, Entergy Nuclear Operations, Inc. (ENO) is proposing an amendment to Operating License DPR-28 for Vermont Yankee Nuclear Power Station (VY). The proposed changes would revise the VY Technical Specifications (TS) to eliminate provisions allowing the High Pressure Coolant Injection (HPCI) system and the Reactor Core Isolation Cooling (RCIC) system to be aligned to the suppression pool when required instrument channels are inoperable. ENO discovered that, in this configuration, the HPCI and RCIC systems would not be capable of mitigating some plant events. Also, an administrative change to the TS Table of Contents is proposed.

ENO has reviewed the proposed amendment in accordance with 10CFR50.92 and concludes it does not involve a significant hazards consideration. In accordance with 10CFR50.91, a copy of this application, with attachments, is being provided to the State of Vermont, Department of Public Service.

Attachment 1 to this letter provides a detailed description and evaluation of the proposed change. Attachment 2 contains a markup of the current TS and Bases pages. Attachment 3 contains the retyped TS and Bases pages. Bases changes are provided for information only.

No new regulatory commitments are made in this submittal.

ENO requests review and approval of the proposed license amendment by August 1, 2011 with a 60 day implementation period from the date of approval to allow for implementation prior to the scheduled refuel outage.

If you have any questions on this transmittal, please contact Mr. Robert Wanczyk at 802-451-3166.

A001
NRR

I declare under penalty of perjury that the foregoing is true and correct.

Executed on November 8, 2010.

Sincerely,

MJC/JMD

Attachments
1. Description and Evaluation of the Proposed Changes
2. Markup of the Current Technical Specifications and Bases Pages
3. Retyped Technical Specifications and Bases Pages

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Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Change 294

Description and Evaluation of Proposed Changes

1. SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations (ENO) hereby proposes to amend Appendix A, Technical Specifications (TS) of the Vermont Yankee Nuclear Power Station (VY) operating license to eliminate provisions allowing the High Pressure Coolant Injection (HPCI) system and the Reactor Core Isolation Cooling (RCIC) systems to be aligned to the suppression pool when required instrument channels are inoperable.

ENO discovered that, in this configuration, the HPCI and RCIC systems were not analyzed to be capable of mitigating certain plant events and therefore determined that the current TS are non-conservative. Based on the guidance contained in NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," dated December 29, 1998 (Reference 6.a), this issue was entered into the VY Corrective Action Program.

The proposed change revises the Notes for TS Tables 3.2.1 and 3.2.9 to eliminate the allowance to align the HPCI and RCIC systems to the suppression pool as an alternative to declaring the affected systems inoperable.

Additionally, the TS Table of Contents is revised to reflect that TS 4.5.I is located on page 109a versus page 109 as currently identified.

Corresponding changes to the TS Bases are made to reflect these changes and to clarify that HPCI and RCIC are inoperable when not aligned to the Condensate Storage Tank (CST). The TS Bases pages are provided for information.

2. DETAILED DESCRIPTION

a. TS 3.2.A provides the operability requirements relating to the Emergency Core Cooling System instrumentation. TS Table 3.2.1 identifies the associated trip functions, applicable operating modes, required trip channels, actions required when the required trip channels are not available and trip settings. For trip function 3.b, Note 5.b allows HPCI to be aligned to the suppression pool as an alternative to placing the inoperable channel in trip if less than the required channels per function are available. This provision to place any inoperable channel in trip or align HPCI system suction to the suppression pool is being eliminated.

   The following changes are proposed to TS 3.2.A, Table 3.2.1, Note 5.

   Current Note 5:

   5. With one or more channels inoperable for ECCS instrument Trip Function 3.b:

   a. Declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI initiation capability when HPCI System suction is aligned to the Condensate Storage Tank; and
   b. Place any inoperable channel in trip or align the HPCI System suction to the suppression pool within 24 hours.

   If any applicable Action and associated completion time of Note 5.a or 5.b is not met, immediately declare the HPCI System inoperable.

Proposed Note 5:

5. With one or more channels inoperable for ECCS instrument Trip Function 3.b, declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI initiation capability.

If any applicable Action and associated completion time of Note 5 is not met, immediately declare the HPCI System inoperable.

b. TS 3.2.L provides the operability requirements relating to the RCIC system actuation instrumentation. TS Table 3.2.9 identifies the associated trip functions, applicable operating modes, required trip channels, actions required when the required trip channels are not available and trip settings. For trip function 2, Note 2.b allows RCIC to be aligned to the suppression pool as an alternative to placing the inoperable channel in trip if less than the required channels per function are available. This provision to place any inoperable channel in trip or align RCIC system suction to the suppression pool is being eliminated.

The following changes are proposed to TS 3.2.L, Table 3.2.9, Note 2.

Current Note 2:

2. With one or more RCIC System instrumentation Trip Function 2 channels inoperable:

a. Declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability when RCIC System suction is aligned to the Condensate Storage Tank; and
b. Place any inoperable channel in trip or align the RCIC System suction to the suppression pool within 24 hours.

If any applicable Action and associated completion time of Note 2.a or 2.b is not met, immediately declare the RCIC System inoperable.

Proposed Note 2:

2. With one or more RCIC System instrumentation Trip Function 2 channels inoperable, declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability.

If any applicable Action and associated completion time of Note 2 is not met, immediately declare the RCIC System inoperable.

c. Additionally, the TS Table of Contents is revised to reflect that TS 4.5.I is located on page 109a versus page 109 as currently identified. This change is the result of License Amendment No. 195 (Reference 6.b) which previously resulted in relocating the information to page 109a. This is an administrative change.

3. TECHNICAL EVALUATION

The HPCI system is a Core Standby Cooling System (CSCS) as described in Updated Final Safety Analysis Report (UFSAR) section 6.1. The CSCS works in conjunction with primary and secondary containment to limit the release of radioactive materials to the environs following a design basis loss-of-coolant-accident (LOCA) so that the resultant radiation dose is within the limits given in 10CFR50.67.

The HPCI system is designed to assure that the reactor is adequately cooled in the event of a small break LOCA which does not result in rapid depressurization of the reactor vessel. Operation of the HPCI system is also credited in transient mitigation as discussed in UFSAR section 14.5 and mitigation of design basis events including a Station Blackout (SBO) event, 10CFR50 Appendix R fire events, and Anticipated Transient Without Scram (ATWS) events.

The RCIC system is not part of the CSCS and is described in UFSAR section 4.7. The RCIC system provides makeup water to the reactor vessel during shutdown and isolation to supplement or replace the normal makeup sources. The RCIC system is designed to operate automatically so that the CSCS are not necessary to maintain sufficient coolant in the reactor vessel during non-accident conditions.

The RCIC system is not credited to mitigate design basis accidents, however it is credited to mitigate postulated transients as discussed in UFSAR section 14.5 as well as SBO, 10CFR50 Appendix R fire and ATWS events.

The HPCI and RCIC systems are both normally designed to take suction from the CST and when the CST gets to a predetermined level the suctions automatically swap over to the suppression pool.

For mitigation of the design basis LOCA, UFSAR section 6.2 requires that the prime source of liquid be located in the primary containment in such a manner that a closed cooling water path is established during CSCS operation. Based on this, the suppression pool is the primary source of liquid credited for mitigation of a design basis LOCA. The suppression pool is part of primary containment and located within secondary containment. HPCI and RCIC are not credited to mitigate the design basis LOCA since the reactor depressurizes rapidly. For the design basis LOCA, the low pressure CSCS systems are relied upon and they take suction from the suppression pool.

For mitigation of some design basis transients described in UFSAR section 14.5, HPCI and RCIC being normally aligned to take suction off the CST is required to satisfy the transient acceptance criteria. Similarly, mitigation of design basis events including SBO, 10CFR50 Appendix R fires and ATWS events HPCI and RCIC being normally aligned to take suction off the CST is required to satisfy the applicable regulatory acceptance criteria. Based on this, alignment of HPCI and RCIC to the CST is required to satisfy design and licensing basis requirements and to support operability.

The current TS provides an allowance for the HPCI and RCIC systems to be aligned to take a suction from the suppression pool, as an option to declaring the systems inoperable when less than the required instrument channels per trip system are operable. Given that specific credit is taken in station safety analyses for the HPCI and RCIC system being normally aligned to the CST in order to satisfy acceptance requirements this action was determined to be non-conservative. This TS change proposes to eliminate this option.

Additionally, the TS Table of Contents is revised to reflect that TS 4.5.I is located on page 109a versus page 109 as currently identified. This change is the result of License Amendment No. 195 which previously resulted in relocating the information to page 109a. This change is administrative and does not change any technical requirements.

4. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Pursuant to 10 CFR 50.92, Entergy Nuclear Operations, Inc. has reviewed the proposed change and concludes that the change does not involve a significant hazards consideration since the proposed change satisfies the criteria in 10 CFR 50.92(c). These criteria require that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. The discussion below addresses each of these criteria and demonstrates that the proposed amendment does not constitute a significant hazard.

The proposed changes would revise the Vermont Yankee Technical Specifications (TS) to eliminate provisions allowing the High Pressure Coolant Injection (HPCI) system and the Reactor Core Isolation Cooling (RCIC) system to be aligned to the suppression pool when required instrument channels are inoperable. ENO discovered that, in this configuration, the HPCI and RCIC systems would not be capable of mitigating some plant events. In addition, an administrative change to the TS Table of Contents is proposed to reflect that TS 4.5.I "Maintenance of Filled Discharge Pipe" starts on page 109a versus page 109 as currently identified.

The proposed change does not involve a significant hazards consideration because:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed amendment does not significantly increase the probability of an accident since it does not involve a change to any plant equipment that initiates a plant accident. The proposed amendment is more restrictive than the current TS in that it no longer allows the HPCI and RCIC systems to be aligned to the suppression pool when required instrument channels are inoperable. The change requires HPCI and RCIC to be declared inoperable within one hour when the associated trip functions are not operable. The change also updates the TS Table of Contents. The HPCI system is credited to mitigate small break loss-of-coolant accidents and the RCIC System is not credited for accident mitigation. The proposed change ensures the systems are aligned consistent with station analysis assumptions. Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change does not involve any physical alteration of plant equipment and does not change the method by which any safety-related system performs its function. The proposed amendment is more restrictive than the current technical specifications in that it no longer allows the HPCI and RCIC systems to be aligned to the suppression pool when required instrument channels are inoperable. The change requires HPCI and RCIC to be declared inoperable within one hour when the associated trip functions are not operable. The change also updates the TS Table of Contents. No new or different types of equipment will be installed and the basic operation of installed equipment is unchanged. The methods governing plant operation and testing remain consistent with current safety analysis assumptions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety.

   Response: No.

   The proposed amendment is more restrictive than the current technical specifications in that it no longer allows the HPCI and RCIC systems to be aligned to the suppression pool when required instrument channels are inoperable. This ensures that safety margins established in station safety analysis are maintained. The proposed amendment does not involve a physical modification of the plant and does not change the design or function of any component or system. The proposed amendment is more restrictive than the current TS in that it no longer allows the HPCI and RCIC systems to be aligned to the suppression pool when required instrument channels are inoperable. The change requires the HPCI and RCIC systems to be declared inoperable within one hour when the associated trip functions are not operable. The change also updates the TS Table of Contents. This ensures analyzed safety margins are maintained. Therefore, operation of VY in accordance with the proposed amendment will not involve a significant reduction in the margin to safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5. ENVIRONMENTAL CONSIDERATIONS

This amendment request meets the eligibility criteria for categorical exclusion from environmental review set forth in 10 CFR 51.22(c)(9) as follows:

(i) The amendment involves no significant hazards determination.

   As described in Section 4 of this evaluation, the proposed change involves no significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed amendment does not involve any physical alterations to the plant configuration that could lead to a change in the type or amount of effluent release offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above, ENO concludes that the proposed change meets the eligibility criteria for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6. REFERENCES

a) NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," dated December 29, 1998
b) Letter, USNRC to VYNPC, "Vermont Yankee Nuclear Power Station – Issuance of Amendment Re: Emergency Core Cooling System Requirements During Cold Shutdown and Refueling (TAC No. MB0048)," NVY 00-101, dated November 17, 2000

Attachment 2

Vermont Yankee Nuclear Power Station

Proposed Change 294

Markup of the Current Technical Specifications and Bases Pages

TABLE OF CONTENTS
(Continued)

Table 3.2.1 ACTION Notes

1. With one or more channels inoperable for ECCS instrumentation Trip Functions 1.a, 1.b, 2.b and 2.c:
   a. Declare the associated systems inoperable within 1 hour from discovery of loss of initiation capability for feature(s) in both divisions; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 1.a or 1.b is not met, immediately declare associated systems inoperable.

2. With one or more channels inoperable for ECCS instrumentation Trip Functions 1.c, 1.d, 1.e, 1.g, 1.h, 2.a, 2.e, 2.h, 2.i and 2.j:
   a. Declare the associated systems inoperable within 1 hour from discovery of loss of initiation capability for feature(s) in both divisions; and
   b. Restore any inoperable channel to operable status within 24 hours.

   If any applicable Action and associated completion time of Note 2.a or 2.b is not met, immediately declare associated systems inoperable.

3. With one or more channels inoperable for ECCS instrumentation Trip Functions 2.d and 2.g:
   a. For Trip Function 2.g only, declare the associated system inoperable within 1 hour from discovery of loss of LPCI initiation capability; and
   b. For Trip Function 2.g, place any inoperable channel in trip within 24 hours.
   c. For Trip Function 2.d restore any inoperable channel to operable status within 24 hours.

   If any applicable Action and associated completion time of Note 3.a, 3.b or 3.c is not met, immediately declare associated systems inoperable.

4. With one or more channels inoperable for ECCS instrumentation Trip Functions 3.a and 3.c:
   a. Declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI System initiation capability; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 4.a or 4.b is not met, immediately declare HPCI System inoperable.

5. With one or more channels inoperable for ECCS instrumentation Trip Function 3.b
   ~~a.~~ Declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI initiation capability ~~when HPCI System suction is aligned to the Condensate Storage Tank; and~~
   ~~b. Place any inoperable channel in trip or align HPCI System suction to the suppression pool within 24 hours.~~

   If any applicable Action and associated completion time of Note 5 ~~a or 5.b~~ is not met, immediately declare the HPCI System inoperable.

Table 3.2.9 ACTION Notes

1. With one or more RCIC System instrumentation Trip Function 1 channels inoperable:

   a. Declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 1.a or 1.b is not met, immediately declare the RCIC System inoperable.

2. With one or more RCIC System instrumentation Trip Function 2 channels inoperable:

   ~~a.~~ Declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability, ~~when RCIC System suction is aligned to the Condensate Storage Tank; and~~

   ~~b. Place any inoperable channel in trip or align RCIC System suction to the suppression pool within 24 hours.~~

   If any applicable Action and associated completion time of Note 2 ~~.a or 2.b~~ is not met, immediately declare the RCIC System inoperable.

3. With one or more RCIC System instrumentation Trip Function 3 channels inoperable:

   a. Restore any inoperable channel to operable status within 24 hours.

   If the Action and associated completion time of Note 3.a is not met, immediately declare the RCIC System inoperable.

Bases Inserts

Insert 1

Table 3.2.1 ACTION Note 5 is intended to ensure that the appropriate actions are taken when required channels are inoperable. The Low Condensate Storage Tank water level trip instrumentation is configured as a single trip system with two channels in a one-out-of-two logic configuration. Therefore, either channel will actuate the trip function. Two channels are required to be operable when HPCI is required to be operable to ensure that no single failure can preclude HPCI swap to the suppression pool. The 1 hour completion time from discovery of loss of initiation capability is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The completion time is acceptable because it minimizes risk while allowing time for restoration of the channels.

Insert 2

Table 3.2.9 ACTION Note 2 is intended to ensure that the appropriate actions are taken when required channels are inoperable. The Low Condensate Storage Tank water level trip instrumentation is configured as a single trip system with two channels in a one-out-of-two logic configuration. Therefore, either channel will actuate the trip function. Two channels are required to be operable when RCIC is required to be operable to ensure that no single failure can preclude RCIC swap to the suppression pool. The 1 hour completion time from discovery of loss of initiation capability is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The completion time is acceptable because it minimizes risk while allowing time for restoration of the channels.

Insert 3

Analysis of some station events credits HPCI being normally aligned to the Condensate Storage Tank (CST) and auto transferring to the Torus. Therefore, when not normally aligned to the CST the HPCI system is inoperable.

Insert 4

Analysis of some station events credits RCIC being normally aligned to the CST and auto transferring to the Torus. Therefore, when not normally aligned to the CST the RCIC system is inoperable.

BASES: 3.2.A/4.2.A EMERGENCY CORE COOLING SYSTEM (ECCS)

ACTIONS (continued)

inoperable within 1 hour. The Table 3.2.1 ACTION Note completion time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. For Table 3.2.1 ACTION Note 4.a, the completion time only begins upon discovery of a loss of HPCI initiation capability due to inoperable, untripped channels within the same Trip Function as described in the paragraph above. The 1 hour completion time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 3) to permit restoration of any inoperable channel to operable status. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition per Table 3.2.1 ACTION Note 4.b. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue.

Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an initiation), the HPCI System must be declared inoperable. With any applicable Action and associated completion time not met, the HPCI System may be incapable of performing the intended function, and the HPCI System must be declared inoperable immediately.

Table 3.2.1 ACTION Note 5 INSERT 1

Table 3.2.1 ACTION Note 5.a is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within the same Trip Function result in a complete loss of automatic component initiation capability for the HPCI System. Automatic component initiation capability is lost if two Trip Function 3.b channels are inoperable and untripped. In this situation (loss of automatic suction swap), the 24 hour allowance of Table 3.2.1 ACTION Note 5.b is not appropriate and the HPCI System must be declared inoperable within 1 hour after discovery of loss of HPCI initiation capability. Table 3.2.1 ACTION Note 5.a is only applicable if the HPCI pump suction is not aligned to the suppression pool, since, if aligned, the Trip Function is already performed.

The completion time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. For Table 3.2.1 ACTION Note 5.a, the completion time only begins upon discovery that the HPCI System cannot be automatically aligned to the suppression pool due to two inoperable, untripped channels in the same Trip Function as described in the paragraph

BASES: 3.2.A/4.2.A EMERGENCY CORE COOLING SYSTEM (ECCS)

ACTIONS (continued)

above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of the ECCS design, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 3) to permit restoration of any inoperable channel to operable status. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition or the suction source must be aligned to the suppression pool per Table 3.2.1 ACTION Note 5.b. Placing the inoperable channel in trip performs the intended function of the channel (shifting the suction source to the suppression pool). Performance of either of the two actions of Table 3.2.1 ACTION Note 5.b will allow operation to continue. If Table 3.2.1 ACTION Note 5.b is performed, measures should be taken to ensure that the HPCI System piping remains filled with water. Alternately, if it is not desired to perform Table 3.2.1 ACTION NOTE 5.b (e.g., as in the case where shifting the suction source could drain down the HPCI suction piping), the HPCI System must be declared inoperable. With any applicable Action and associated completion time not met, the HPCI System may be incapable of performing the intended function, and the HPCI System must be declared inoperable immediately.

Table 3.2.1 ACTION Note 6

For Trip Function 3.d, the loss of one or more channels results in a loss of the function (two-out-of-two logic). This loss was considered during the development of Reference 3 and considered acceptable for the 24 hours allowed to permit restoration of the inoperable channel to operable status by Table 3.2.1 ACTION Note 6.a. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the HPCI System must be declared inoperable. With any applicable Action and associated completion time not met, the HPCI System may be incapable of performing the intended function, and the HPCI System must be declared inoperable immediately. The Required Actions do not allow placing the channel in trip since this action would either cause the initiation or it would not necessarily result in a safe state for the channel in all events.

Table 3.2.1 ACTION Note 7

Table 3.2.1 ACTION Note 7.a is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within the same Trip Function result in redundant automatic initiation capability being lost for the ADS. Redundant automatic initiation capability is lost if either (a) one or more Trip Function 4.a channels are inoperable and untripped in each trip system logic, or (b) one or more Trip Function 4.b channels are inoperable and untripped in each trip system.

BASES: 3.2.L/4.2.L REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM INSTRUMENTATION

ACTIONS (continued)

Low Reactor Vessel Water Level channels in the same trip system logic. The 1 hour completion time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of sensors available to provide initiation signals and the fact that the RCIC System is not assumed in any accident or transient analysis, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 2) to permit restoration of any inoperable channel to operable status. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition per Table 3.2.9 ACTION Note 1.b. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue.

With any required Action and associated completion time of Table 3.2.9 ACTION Note 1.a or 1.b not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

Table 3.2.9 ACTION Note 2 INSERT 2

Table 3.2.9 ACTION 2.a is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels of Trip Function 2 result in automatic RCIC initiation (i.e., suction swap) capability being lost. In this case, automatic RCIC suction swap capability is lost if two Trip Function 2 channels are inoperable and untripped. In this situation (loss of automatic suction swap), the 24 hour allowance of Table 3.2.9 ACTION Note 2.b is not appropriate, and the RCIC System must be declared inoperable within 1 hour from discovery of loss of RCIC initiation capability when the RCIC System suction is aligned to the CST. Table 3.2.9 ACTION Note 2.a is only applicable if the RCIC System suction is not aligned to the suppression pool since, if aligned, the Trip Function is already performed. The completion time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. For Table 3.2.9 ACTION Note 2.a, the completion time only begins upon discovery that the RCIC System cannot be automatically aligned to the suppression pool due to two inoperable, untripped channels in Trip Function 2. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of sensors available to provide initiation signals and the fact that the RCIC System is not assumed in any accident or transient analysis, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 2) to permit restoration of any inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to operable

BASES: 3.2.L/4.2.L REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM INSTRUMENTATION

ACTIONS (continued)

status within the allowable out of service time, the channel must be placed in the tripped condition per Table 3.2.9 ACTION Note 2.b, which performs the intended function of the channel (shifting the suction source to the suppression pool). Alternatively, Table 3.2.9 ACTION Note 2.b allows the manual alignment of the RCIC System suction to the suppression pool, which also performs the intended function. If either action of Table 3.2.9 ACTION Note 2.b is performed, measures should be taken to ensure that the RCIC System piping remains filled with water.

With any required Action and associated completion time of Table 3.2.9 ACTION Note 2.a or 2.b not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

Table 3.2.9 ACTION Note 3

A risk based analysis was performed and determined that an allowable out of service time of 24 hours (Ref. 2) is acceptable to permit restoration of any inoperable Trip Function 3 channel to operable status (Table 3.2.9 ACTION Note 3.a). A required Action (similar to Table 3.2.9 ACTION Note 1.a) limiting the allowable out of service time, if a loss of automatic RCIC initiation capability (i.e., loss of high water level trip capability) exists, is not required. Table 3.2.9 ACTION Note 3 applies to the High Reactor Vessel Water Level Trip Function whose logic is arranged such that any inoperable channel will result in a loss of automatic RCIC initiation capability. As stated above, this loss of automatic RCIC initiation capability was analyzed and determined to be acceptable. One inoperable channel may result in a loss of high water level trip capability but will not prevent RCIC System automatic start capability. However, the Required Action does not allow placing a channel in trip since this action would not necessarily result in a safe state for the channel in all events (a failure of the remaining channel could prevent a RCIC System start).

With any required Action and associated completion time of Table 3.2.9 ACTION Note 3.a not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.2.L.1

As indicated in Surveillance Requirement 4.2.L.1, RCIC System instrumentation shall be checked, functionally tested and calibrated as indicated in Table 4.2.9. Table 4.2.9 identifies, for each Trip Function, the applicable Surveillance Requirements.

Surveillance Requirement 4.2.L.1 also indicates that when a channel is placed in an inoperable status solely for performance of required instrumentation Surveillances, entry into associated LCO and required Actions may be delayed

BASES: 3.5 (Cont'd)

SSW pump, SSW valve, etc.), then reactor operation is limited to 15 days provided that during this time both the normal and emergency power supplies for the remaining operable equipment are also operable, in addition to requiring the operability of all remaining active components of the SSW system which perform a safety function and the alternate cooling tower fan.

If the SSW System would not be capable of performing its safety function for any reason, even without assuming a worst case single active failure, then the reactor must be placed in the cold shutdown condition within 24 hours.

E. High Pressure Coolant Injection System

The High Pressure Coolant Injection System (HPCIs) is provided to adequately cool the core for all pipe breaks smaller than those for which the LPCI or Core Spray Cooling Subsystems can protect the core.

The HPCIs meets this requirement without the use of outside power. For the pipe breaks for which the HPCIs is intended to function the core never uncovers and is continuously cooled; thus, no clad damage occurs and clad temperatures remain near normal throughout the transient. Reference: Subsection 6.5.2.2 of the FSAR.

In accordance with Specification 3.5.E.2, if the HPCI System is inoperable and the RCIC System is verified to be operable, the HPCI System must be restored to operable status within 14 days during reactor power operation. In this condition, adequate core cooling is ensured by the operability of the redundant and diverse low pressure emergency core cooling system (ECCS) injection and spray subsystems in conjunction with the Automatic Depressurization System (ADS). Also, the RCIC System will automatically provide makeup water at reactor operating pressures above 150 psig. During reactor power operation, immediate verification of RCIC operability is therefore required when HPCI is inoperable. This may be performed as an administrative check by examining logs or other information to determine if RCIC is out of service for maintenance or other reasons. It does not mean it is necessary to perform the surveillances needed to demonstrate the operability of the RCIC System. If operability of the RCIC System cannot be verified, however, Specification 3.5.E.3 requires that an orderly shutdown be initiated and reactor pressure reduced to ≤ 150 psig within 24 hours.

F. Automatic Depressurization System ← INSERT 3

The Automatic Depressurization System (ADS) consists of the four safety-relief valves and serves as a backup to the High Pressure Coolant Injection System (HPCI). ADS is designed to provide depressurization of the reactor coolant system during a small break loss-of-coolant accident if HPCI fails or is unable to maintain sufficient reactor water level. Since HPCI operability is required above 150 psig, ADS operability is also required above this pressure.

ADS operation reduces the reactor pressure to within the operating pressure range of the low pressure coolant injection and core spray systems, so that these systems can provide reactor coolant inventory makeup.

BASES: 3.5 (Cont'd)

G. Reactor Core Isolation Cooling System

The Reactor Core Isolation Cooling System (RCIC) is provided to maintain the water inventory of the reactor vessel in the event of a main steam line isolation and complete loss of outside power without the use of the emergency core cooling systems. The RCIC meets this requirement. Reference Section 14.5.4.4 FSAR. The HPCIS provides an incidental backup to the RCIC system such that in the event the RCIC should be inoperable no loss of function would occur if the HPCIS is operable.

In accordance with specification 3.5.G.2, if the RCIC System is inoperable and the HPCI System is verified to be operable, the RCIC System must be restored to operable status within 14 days during reactor power operation. In this condition, loss of the RCIC System will not affect the overall plant capability to provide makeup inventory at high reactor pressure since the HPCI System is the only high pressure system assumed to function during a loss of coolant accident. Operability of HPCI is therefore verified immediately when the RCIC System is inoperable during reactor power operation. This may be performed as an administrative check, by examining logs or other information, to determine if HPCI is out of service for maintenance or other reasons. It does not mean it is necessary to perform surveillances needed to demonstrate the operability of the HPCI System. If the operability of the HPCI System cannot be verified, however, Specification 3.5.G.3 requires that an orderly shutdown be initiated and reactor pressure reduced to ≤ 150 psig within 24 hours. For transients and certain abnormal events with no LOCA, RCIC (as opposed to HPCI) is the preferred source of makeup coolant because of its relatively small capacity, which allows easier control of the reactor water level. therefore, a limited time (14 days) is allowed to restore the inoperable RCIC System to operable status.

← INSERT 4

H. Minimum Core and Containment Cooling System Availability

The core cooling and containment cooling subsystems provide a method of transferring the residual heat following a shutdown or accident to a heat sink. Based on analyses, this specification assures that the core and containment cooling function is maintained with any combination of allowed inoperable components.

Operability of low pressure ECCS injection/spray subsystems is required during cold shutdown and refueling conditions to ensure adequate coolant inventory and sufficient heat removal capability for the irradiated fuel in the core in case of inadvertent draindown of the vessel. It is permissible, based upon the low heat load and other methods available to remove the residual heat, to disable all core and containment cooling systems for maintenance if the reactor is in cold shutdown or refueling and there are no operations with a potential for draining the reactor vessel (OPDRV). However, if OPDRVs are in progress with irradiated fuel in the reactor vessel, operability of low pressure ECCS injection/spray subsystems is required to ensure capability to maintain adequate reactor vessel water level in the event of an inadvertent vessel draindown. In this condition, at least 300,000 gallons of makeup water must be available to assure core flooding capability. In addition, only one diesel generator associated with one of the ECCS injection/spray subsystems is required to be operable in this condition since, upon loss of normal power supply, one ECCS subsystem is sufficient to meet this function.

Attachment 3

Vermont Yankee Nuclear Power Station

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Retyped Technical Specifications and Bases Pages

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(Continued)

Table 3.2.1 ACTION Notes

1. With one or more channels inoperable for ECCS instrumentation Trip Functions 1.a, 1.b, 2.b and 2.c:
   a. Declare the associated systems inoperable within 1 hour from discovery of loss of initiation capability for feature(s) in both divisions; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 1.a or 1.b is not met, immediately declare associated systems inoperable.

2. With one or more channels inoperable for ECCS instrumentation Trip Functions 1.c, 1.d, 1.e, 1.g, 1.h, 2.a, 2.e, 2.h, 2.i and 2.j:
   a. Declare the associated systems inoperable within 1 hour from discovery of loss of initiation capability for feature(s) in both divisions; and
   b. Restore any inoperable channel to operable status within 24 hours.

   If any applicable Action and associated completion time of Note 2.a or 2.b is not met, immediately declare associated systems inoperable.

3. With one or more channels inoperable for ECCS instrumentation Trip Functions 2.d and 2.g:
   a. For Trip Function 2.g only, declare the associated system inoperable within 1 hour from discovery of loss of LPCI initiation capability; and
   b. For Trip Function 2.g, place any inoperable channel in trip within 24 hours.
   c. For Trip Function 2.d restore any inoperable channel to operable status within 24 hours.

   If any applicable Action and associated completion time of Note 3.a, 3.b or 3.c is not met, immediately declare associated systems inoperable.

4. With one or more channels inoperable for ECCS instrumentation Trip Functions 3.a and 3.c:
   a. Declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI System initiation capability; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 4.a or 4.b is not met, immediately declare HPCI System inoperable.

5. With one or more channels inoperable for ECCS instrumentation Trip Function 3.b, declare the HPCI System inoperable within 1 hour from discovery of loss of HPCI initiation capability.

   If any applicable Action and associated completion time of Note 5 is not met, immediately declare the HPCI System inoperable.

Table 3.2.9 ACTION Notes

1. With one or more RCIC System instrumentation Trip Function 1 channels inoperable:

   a. Declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability; and
   b. Place any inoperable channel in trip within 24 hours.

   If any applicable Action and associated completion time of Note 1.a or 1.b is not met, immediately declare the RCIC System inoperable.

2. With one or more RCIC System instrumentation Trip Function 2 channels inoperable, declare the RCIC System inoperable within 1 hour from discovery of loss of RCIC initiation capability.

   If any applicable Action and associated completion time of Note 2 is not met, immediately declare the RCIC System inoperable.

3. With one or more RCIC System instrumentation Trip Function 3 channels inoperable:

   a. Restore any inoperable channel to operable status within 24 hours.

   If the Action and associated completion time of Note 3.a is not met, immediately declare the RCIC System inoperable.

BASES: 3.2.A/4.2.A EMERGENCY CORE COOLING SYSTEM (ECCS)

ACTIONS (continued)

inoperable within 1 hour. The Table 3.2.1 ACTION Note completion time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. For Table 3.2.1 ACTION Note 4.a, the completion time only begins upon discovery of a loss of HPCI initiation capability due to inoperable, untripped channels within the same Trip Function as described in the paragraph above. The 1 hour completion time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 3) to permit restoration of any inoperable channel to operable status. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition per Table 3.2.1 ACTION Note 4.b. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue.

Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an initiation), the HPCI System must be declared inoperable. With any applicable Action and associated completion time not met, the HPCI System may be incapable of performing the intended function, and the HPCI System must be declared inoperable immediately.

Table 3.2.1 ACTION Note 5

Table 3.2.1 ACTION Note 5 is intended to ensure that the appropriate actions are taken when required channels are inoperable. The Low Condensate Storage Tank water level trip instrumentation is configured as a single trip system with two channels in a one-out-of-two logic configuration. Therefore, either channel will actuate the trip function. Two channels are required to be operable when HPCI is required to be operable to ensure that no single failure can preclude HPCI swap to the suppression pool. The 1 hour completion time from discovery of loss of initiation capability is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The completion time is acceptable because it minimizes risk while allowing time for restoration of the channels.

BASES: 3.2.A/4.2.A EMERGENCY CORE COOLING SYSTEM (ECCS)

ACTIONS (continued)

Table 3.2.1 ACTION Note 6

For Trip Function 3.d, the loss of one or more channels results in a loss of the function (two-out-of-two logic). This loss was considered during the development of Reference 3 and considered acceptable for the 24 hours allowed to permit restoration of the inoperable channel to operable status by Table 3.2.1 ACTION Note 6.a. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the HPCI System must be declared inoperable. With any applicable Action and associated completion time not met, the HPCI System may be incapable of performing the intended function, and the HPCI System must be declared inoperable immediately. The Required Actions do not allow placing the channel in trip since this action would either cause the initiation or it would not necessarily result in a safe state for the channel in all events.

Table 3.2.1 ACTION Note 7

Table 3.2.1 ACTION Note 7.a is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within the same Trip Function result in redundant automatic initiation capability being lost for the ADS. Redundant automatic initiation capability is lost if either (a) one or more Trip Function 4.a channels are inoperable and untripped in each trip system logic, or (b) one or more Trip Function 4.b channels are inoperable and untripped in each trip system.

BASES: 3.2.L/4.2.L REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM INSTRUMENTATION

ACTIONS (continued)

Low Reactor Vessel Water Level channels in the same trip system logic. The 1 hour completion time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of sensors available to provide initiation signals and the fact that the RCIC System is not assumed in any accident or transient analysis, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 2) to permit restoration of any inoperable channel to operable status. If the inoperable channel cannot be restored to operable status within the allowable out of service time, the channel must be placed in the tripped condition per Table 3.2.9 ACTION Note 1.b. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue.

With any required Action and associated completion time of Table 3.2.9 ACTION Note 1.a or 1.b not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

Table 3.2.9 ACTION Note 2

Table 3.2.9 ACTION Note 2 is intended to ensure that the appropriate actions are taken when required channels are inoperable. The Low Condensate Storage Tank water level trip instrumentation is configured as a single trip system with two channels in a one-out-of-two logic configuration. Therefore, either channel will actuate the trip function. Two channels are required to be operable when RCIC is required to be operable to ensure that no single failure can preclude RCIC swap to the suppression pool. The 1 hour completion time from discovery of loss of initiation capability is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The completion time is acceptable because it minimizes risk while allowing time for restoration of the channels.

BASES: 3.2.L/4.2.L REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM INSTRUMENTATION

ACTIONS (continued)

Table 3.2.9 ACTION Note 3

A risk based analysis was performed and determined that an allowable out of service time of 24 hours (Ref. 2) is acceptable to permit restoration of any inoperable Trip Function 3 channel to operable status (Table 3.2.9 ACTION Note 3.a). A required Action (similar to Table 3.2.9 ACTION Note 1.a) limiting the allowable out of service time, if a loss of automatic RCIC initiation capability (i.e., loss of high water level trip capability) exists, is not required. Table 3.2.9 ACTION Note 3 applies to the High Reactor Vessel Water Level Trip Function whose logic is arranged such that any inoperable channel will result in a loss of automatic RCIC initiation capability. As stated above, this loss of automatic RCIC initiation capability was analyzed and determined to be acceptable. One inoperable channel may result in a loss of high water level trip capability but will not prevent RCIC System automatic start capability. However, the Required Action does not allow placing a channel in trip since this action would not necessarily result in a safe state for the channel in all events (a failure of the remaining channel could prevent a RCIC System start).

With any required Action and associated completion time of Table 3.2.9 ACTION Note 3.a not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.2.L.1

As indicated in Surveillance Requirement 4.2.L.1, RCIC System instrumentation shall be checked, functionally tested and calibrated as indicated in Table 4.2.9. Table 4.2.9 identifies, for each Trip Function, the applicable Surveillance Requirements.

Surveillance Requirement 4.2.L.1 also indicates that when a channel is placed in an inoperable status solely for performance of required instrumentation Surveillances, entry into associated LCO and required Actions may be delayed

BASES: 3.5 (Cont'd)

SSW pump, SSW valve, etc.), then reactor operation is limited to 15 days provided that during this time both the normal and emergency power supplies for the remaining operable equipment are also operable, in addition to requiring the operability of all remaining active components of the SSW system which perform a safety function and the alternate cooling tower fan.

If the SSW System would not be capable of performing its safety function for any reason, even without assuming a worst case single active failure, then the reactor must be placed in the cold shutdown condition within 24 hours.

E. High Pressure Coolant Injection System

The High Pressure Coolant Injection System (HPCIs) is provided to adequately cool the core for all pipe breaks smaller than those for which the LPCI or Core Spray Cooling Subsystems can protect the core.

The HPCIs meets this requirement without the use of outside power. For the pipe breaks for which the HPCIs is intended to function the core never uncovers and is continuously cooled; thus, no clad damage occurs and clad temperatures remain near normal throughout the transient. Reference: Subsection 6.5.2.2 of the FSAR.

In accordance with Specification 3.5.E.2, if the HPCI System is inoperable and the RCIC System is verified to be operable, the HPCI System must be restored to operable status within 14 days during reactor power operation. In this condition, adequate core cooling is ensured by the operability of the redundant and diverse low pressure emergency core cooling system (ECCS) injection and spray subsystems in conjunction with the Automatic Depressurization System (ADS). Also, the RCIC System will automatically provide makeup water at reactor operating pressures above 150 psig. During reactor power operation, immediate verification of RCIC operability is therefore required when HPCI is inoperable. This may be performed as an administrative check by examining logs or other information to determine if RCIC is out of service for maintenance or other reasons. It does not mean it is necessary to perform the surveillances needed to demonstrate the operability of the RCIC System. If operability of the RCIC System cannot be verified, however, Specification 3.5.E.3 requires that an orderly shutdown be initiated and reactor pressure reduced to $\leq$ 150 psig within 24 hours.

Analysis of some station events credits HPCI being initially aligned to the Condensate Storage Tank (CST) and auto transferring to the Torus. Therefore, when not normally aligned to the CST the HPCI system is inoperable.

F. Automatic Depressurization System

The Automatic Depressurization System (ADS) consists of the four safety-relief valves and serves as a backup to the High Pressure Coolant Injection System (HPCI). ADS is designed to provide depressurization of the reactor coolant system during a small break loss-of-coolant accident if HPCI fails or is unable to maintain sufficient reactor water level. Since HPCI operability is required above 150 psig, ADS operability is also required above this pressure.

ADS operation reduces the reactor pressure to within the operating pressure range of the low pressure coolant injection and core spray systems, so that these systems can provide reactor coolant inventory makeup.

BASES: 3.5 (Cont'd)

G. Reactor Core Isolation Cooling System

The Reactor Core Isolation Cooling System (RCIC) is provided to maintain the water inventory of the reactor vessel in the event of a main steam line isolation and complete loss of outside power without the use of the emergency core cooling systems. The RCIC meets this requirement. Reference Section 14.5.4.4 FSAR. The HPCIS provides an incidental backup to the RCIC system such that in the event the RCIC should be inoperable no loss of function would occur if the HPCIS is operable.

In accordance with specification 3.5.G.2, if the RCIC System is inoperable and the HPCI System is verified to be operable, the RCIC System must be restored to operable status within 14 days during reactor power operation. In this condition, loss of the RCIC System will not affect the overall plant capability to provide makeup inventory at high reactor pressure since the HPCI System is the only high pressure system assumed to function during a loss of coolant accident. Operability of HPCI is therefore verified immediately when the RCIC System is inoperable during reactor power operation. This may be performed as an administrative check, by examining logs or other information, to determine if HPCI is out of service for maintenance or other reasons. It does not mean it is necessary to perform surveillances needed to demonstrate the operability of the HPCI System. If the operability of the HPCI System cannot be verified, however, Specification 3.5.G.3 requires that an orderly shutdown be initiated and reactor pressure reduced to $\leq$ 150 psig within 24 hours. For transients and certain abnormal events with no LOCA, RCIC (as opposed to HPCI) is the preferred source of makeup coolant because of its relatively small capacity, which allows easier control of the reactor water level. Therefore, a limited time (14 days) is allowed to restore the inoperable RCIC System to operable status.

Analysis of some station events credits RCIC being initially aligned to the CST and auto transferring to the Torus. Therefore, when not normally aligned to the CST the RCIC system is inoperable.

H. Minimum Core and Containment Cooling System Availability

The core cooling and containment cooling subsystems provide a method of transferring the residual heat following a shutdown or accident to a heat sink. Based on analyses, this specification assures that the core and containment cooling function is maintained with any combination of allowed inoperable components.

Operability of low pressure ECCS injection/spray subsystems is required during cold shutdown and refueling conditions to ensure adequate coolant inventory and sufficient heat removal capability for the irradiated fuel in the core in case of inadvertent draindown of the vessel. It is permissible, based upon the low heat load and other methods available to remove the residual heat, to disable all core and containment cooling systems for maintenance if the reactor is in cold shutdown or refueling and there are no operations with a potential for draining the reactor vessel (OPDRV). However, if OPDRVs are in progress with irradiated fuel in the reactor vessel, operability of low pressure ECCS injection/spray subsystems is required to ensure capability to maintain adequate reactor vessel water level in the event of an inadvertent vessel draindown. In this condition, at least 300,000 gallons of makeup water must be available to assure core flooding capability. In addition, only one diesel generator associated with one of the ECCS injection/spray

BASES: 3.5 (Cont'd)

subsystems is required to be operable in this condition since, upon loss of normal power supply, one ECCS subsystem is sufficient to meet this function.

The low pressure ECCS injection/spray subsystems consist of two core spray (CS) and two low pressure coolant injection (LPCI) subsystems. During cold shutdown and refueling conditions, each CS subsystem requires one motor driven pump, piping, and valves to transfer water from the suppression pool or condensate storage tank to the reactor pressure vessel (RPV). Also, during cold shutdown and refueling conditions, each LPCI subsystem requires one motor driven pump, piping, and valves to transfer water from the suppression pool to the RPV. Under these conditions, only a single LPCI pump is required per subsystem because of the larger injection capacity in relation to a CS subsystem. During shutdown and refueling conditions, LPCI subsystems may be considered operable during RHR system alignment and operation for decay heat removal, if those subsystems are capable of being manually realigned to the LPCI mode and are not otherwise inoperable. Because of low pressure and low temperature conditions during cold shutdown and refueling, sufficient time will be available to manually align and initiate LPCI subsystem operation to provide core cooling prior to postulated fuel uncovery.

I. Maintenance of Filled Discharge Pipe

Full discharge lines are required when the core spray subsystems, LPCI subsystems, HPCI and RCIC are required to be operable to preclude the possibility of damage to the discharge piping due to water hammer action upon a pump start.