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Constellation Energy
Nine Mile Point Nuclear Station

September 27, 2007

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 1; Docket No. 50-220

License Amendment Request Pursuant to 10 CFR 50.90: Revisions to Operability Requirements for Reactor Coolant System Isolation Valves – Technical Specification Sections 3.2.7 and 3.6.2

Pursuant to 10 CFR 50.90, Nine Mile Point Nuclear Station, LLC, (NMPNS) hereby requests an amendment to Nine Mile Point Unit 1 (NMP1) Renewed Operating License DPR-63. The proposed changes to the Technical Specifications (TSs) contained herein would revise the operability requirements contained in TS Section 3.2.7, "Reactor Coolant System Isolation Valves," and associated requirements contained in TS Section 3.6.2, "Protective Instrumentation." The proposed changes would modify the conditions for which reactor coolant system isolation valves (RCSIVs) and associated isolation instrumentation must be operable to include the hot shutdown reactor operating condition (i.e., when fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F). In addition, new requirements are proposed to require that the RCSIVs in the shutdown cooling (SDC) system and associated isolation instrumentation be operable during the cold shutdown reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F) and the refueling reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than 212°F). These proposed changes will enhance shutdown safety by requiring operability of RCSIVs during conditions other than the power operating condition, and are similar in concept to primary containment isolation valve operability requirements contained in NUREG-1433, Standard Technical Specifications – General Electric Plants, BWR/4, Revision 3.1. Lastly, TS Section 3.6.2 (Table 3.6.2b) would be revised to delete unnecessary operability requirements for the cleanup system and SDC system high area temperature isolation instrumentation, consistent with the proposed revisions to the RCSIV operability requirements.

Attachment (1) provides a description and technical basis for the proposed changes. Attachment (2) provides the existing TS pages marked up to show the proposed changes. Associated TS Bases page

mark-ups are provided in Attachment (3). The TS Bases changes are provided for information only and will be processed in accordance with the NMP1 TS Bases Control Program (TS Section 6.5.6).

NMPNS requests approval of this license amendment request by September 30, 2008, with implementation within 90 days of receipt of the approved amendment.

Pursuant to 10 CFR 50.91(b)(1), NMPNS has provided a copy of this license amendment request, with attachments, to the appropriate state representative.

Should you have any questions regarding the information in this submittal, please contact T. F. Syrell, Licensing Director, at (315) 349-5219.

Very truly yours,

STATE OF NEW YORK :
: **TO WIT:**
COUNTY OF OSWEGO :

I, Keith J. Polson, being duly sworn, state that I am Vice President-Nine Mile Point, and that I am duly authorized to execute and file this request on behalf of Nine Mile Point Nuclear Station, LLC. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Nine Mile Point employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Oswego, this 27th day of September, 2007.

WITNESS my Hand and Notarial Seal:

Notary Public

My Commission Expires:

10/25/09
Date

SANDRA A. OSWALD
Notary Public, State of New York
No. 01OS6032276
Qualified in Oswego County
Commission Expires 10-25-09

KJP/DEV

Attachments: (1) Technical Basis and No Significant Hazards Determination
(2) Proposed Technical Specification (TS) Changes (Marked Up Pages)
(3) Proposed Technical Specification (TS) Bases Changes (Marked Up Pages)

cc: S. J. Collins, NRC Regional Administrator, Region I
M. J. David, NRC Project Manager
Resident Inspector, NRC
J. P. Spath, NYSERDA

ATTACHMENT (1)

TECHNICAL BASIS AND

NO SIGNIFICANT HAZARDS DETERMINATION

TABLE OF CONTENTS

1. DESCRIPTION

This letter is a request to amend Renewed Operating License DPR-63 for Nine Mile Point Unit 1 (NMP1). The proposed change would amend the Renewed Operating License by revising the operability requirements contained in Technical Specification (TS) Section 3.2.7, "Reactor Coolant System Isolation Valves," and associated requirements contained in TS Section 3.6.2, "Protective Instrumentation." The proposed changes would modify the conditions for which reactor coolant system isolation valves (RCSIVs) and associated isolation instrumentation must be operable to include the hot shutdown reactor operating condition (i.e., when fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F). In addition, new requirements are proposed to require that the RCSIVs in the shutdown cooling (SDC) system and associated isolation instrumentation be operable during the cold shutdown reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F) and the refueling reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than 212°F). These proposed changes will enhance shutdown safety by requiring operability of RCSIVs during conditions other than the power operating condition, and are similar in concept to primary containment isolation valve operability requirements contained in NUREG-1433, Standard Technical Specifications – General Electric Plants, BWR/4, Revision 3.1 (Reference 1). Lastly, TS Section 3.6.2 (Table 3.6.2b) would be revised to delete unnecessary operability requirements for the cleanup system and SDC system high area temperature isolation instrumentation, consistent with the proposed revisions to the RCSIV operability requirements.

2. PROPOSED CHANGE

The proposed TS changes are described below and are indicated on the marked up pages provided in Attachment (2). Formatting and editorial changes are included to accommodate incorporation of the new provisions. Associated TS Bases changes are shown in Attachment (3). The TS Bases changes are provided for information only and will be processed in accordance with the NMP1 TS Bases Control Program (TS Section 6.5.6).

<u>TS Sections 3.2.7 and 4.2.7, Reactor Coolant System Isolation Valves</u>

a. The "Objective" statement in TS Sections 3.2.7 and 4.2.7 is revised to include the primary containment isolation function that is performed by the RCSIVs in the event of a loss of coolant accident.

b. The TS Section 3.2.7.a description of the operating conditions for which the RCSIVs must be operable is revised by replacing the phrase "During power operating conditions whenever the reactor head is on" with the phrase "Whenever fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F." In addition, the reference to "b" is replaced by "Specification 3.2.7.b."

c. TS Section 3.2.7.b is revised to define the operating conditions for which TS Section 3.2.7.b is applicable, by adding the phrase "whenever fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F." In addition, a time limit of 4 hours is added for completion of the action to place at least one valve in each line having an inoperable valve in the mode corresponding to the isolated condition.

d. Three new TS sections, 3.2.7.d, 3.2.7.e, and 3.2.7.f, are added to incorporate operability requirements and associated actions for RCSIVs in the SDC system lines whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F (encompassing the cold shutdown and refueling reactor operating conditions). These new requirements are similar in concept to those contained in NUREG-1433 and are summarized as follows:

- TS Section 3.2.7.d requires the isolation valves on the SDC lines connected to the reactor coolant system to be operable whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F.

- In the event that any SDC system isolation valve becomes inoperable whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F, TS Section 3.2.7.e allows operations to continue provided that, within 4 hours, at least one valve in each SDC line having an inoperable valve is placed in the mode corresponding to the isolated condition.

- If TS Sections 3.2.7.d and 3.2.7.e are not met, TS Section 3.2.7.f requires that either of the following actions must be taken:

  (1) Immediately initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs), or

  (2) Immediately initiate action to restore the valve(s) to operable status.

<u>TS Sections 3.6.2 and 4.6.2, Protective Instrumentation</u>

a. In Table 3.6.2b, "Instrumentation that Initiates Primary Coolant System or Containment Isolation," the existing table entries for Primary Coolant Isolation – Parameter (1), Low-Low Reactor Water Level, are replaced with two separate rows of entries (one row for main steam and cleanup system isolation, and one row for SDC system isolation), and two new notes [(i) and (j)] are added. These table revisions are consistent with the revised RCSIV operability requirements described under TS Section 3.2.7 above and are summarized as follows:

- For the main steam and cleanup systems, the applicable operating conditions for the low-low reactor water level isolation function are revised to include the hot shutdown condition (reactor mode switch in the shutdown position with reactor coolant temperature greater than 212°F).

- For the SDC system, the applicable operating conditions for the low-low reactor water level isolation function are revised to include all reactor mode switch positions (encompassing the run, startup, hot shutdown, cold shutdown, and refueling reactor operating conditions). However, when SDC system integrity is maintained during the cold shutdown and refueling conditions, only one of the two low-low reactor water level instrumentation trip systems is required to be operable. If one of the two required operable channels in the required trip system becomes inoperable, the inoperable channel must be placed in the tripped condition within 12 hours, or either of the following actions must be taken:

  (1) Immediately initiate action to restore the channel to operable status, or

  (2) Immediately initiate action to isolate the SDC system.

b. In Table 3.6.2b, the applicable operating conditions for the following two isolation functions are revised by deleting the cold shutdown and refueling reactor operating conditions, to be consistent with the revised RCSIV operability requirements described under TS Section 3.2.7 above:

- Cleanup System Isolation – Parameter (8), High Area Temperature
- Shutdown Cooling System Isolation – Parameter (9), High Area Temperature.

c. In Table 4.6.2b, in the "Parameter" column, under the heading of PRIMARY COOLANT ISOLATION, the description contained in the parentheses is editorially revised by adding the word "cooling" after "shutdown."

3. BACKGROUND

Containment isolation valves are provided on lines penetrating the drywell and the pressure suppression chamber to assure integrity of the primary containment when required during emergency and post-accident periods. For NMP1, containment isolation valves are divided into two categories:

- Reactor coolant system isolation valves (RCSIVs) are on lines that penetrate the primary containment and connect to the reactor coolant system (or a system containing reactor coolant), and function as reactor coolant pressure boundary components.
- Primary containment isolation valves (PCIVs) are on lines that penetrate the primary containment and connect directly to the free space enclosed by the containment.

Closure of the RCSIVs and PCIVs, in combination with other accident mitigation systems, limits fission product release during and following postulated design basis accidents (DBAs) to within limits. Containment isolation valve closure within the time limits specified for those isolation valves designed to close automatically minimizes reactor coolant loss in the event of a rupture of a line connected to the reactor coolant system (RCS), and ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a DBA. The RCSIVs and PCIVs are listed in the NMP1 Updated Final Safety Analysis Report (UFSAR), Tables VI-3a and VI-3b, respectively.

Containment isolation instrumentation automatically initiates closure of appropriate RCSIVs and PCIVs. As described in UFSAR Sections VI-D and VIII-A, automatic PCIV closure is initiated on either high drywell pressure or low-low reactor vessel water level. Automatic RCSIV closure is initiated on low-low reactor vessel water level. Automatic isolation of the RCSIVs in the main steam, cleanup, and SDC systems also occurs in response to conditions indicative of excessive system leakage or line break (e.g., high equipment area temperature and high main steam line flow).

The SDC system, described in UFSAR Section X-A, is designed to complete cooldown of the reactor coolant system following a reactor shutdown, from temperatures and pressures below which the main condenser may no longer be used as a heat sink. The system is manually initiated at or below a reactor pressure of 120 psig and a temperature of 350°F to cool the reactor water to 125°F and maintain it at this temperature so that refueling or maintenance activities can be initiated. The SDC system only operates during plant shutdown conditions and is not credited in the plant safety analyses as being required to bring the plant to a safe shutdown condition. Two motor-operated isolation valves are provided on the SDC suction line from the reactor recirculation system, and one motor-operated isolation valve and a

check valve are provided on the SDC return line to the reactor recirculation system. These isolation valves are normally closed during reactor operation. The motor-operated valves close on a low-low reactor water level signal from the reactor protection system, and also close automatically on high area temperature. In addition, the inboard and outboard suction isolation valves are interlocked so that only one valve can be exercised at a time when reactor pressure is above 120 psig to prevent inadvertent overpressurization of the system. Interlocks also prevent the SDC system pumps from operating unless the suction temperature is below 350°F and the motor-operated system isolation valves are open. The SDC system RCSIVs are provided with a water seal to prevent containment atmosphere leakage following a DBA. During normal reactor operation, the motor-operated isolation valves are closed and power is removed to prevent loss of the water seal due to spurious or inadvertent valve opening, except when the SDC system is required to be placed in service. The NRC accepted the water seal design in the safety evaluation accompanying License Amendment No. 154, issued by NRC letter dated March 20, 1995 (Reference 2).

The NMP1 TS currently contain inconsistent operability requirements for RCSIVs and PCIVs. TS Section 3.2.7.a requires that RCSIVs be operable "during power operating conditions whenever the reactor head is on," whereas TS Section 3.3.4.a requires that PCIVs be operable "whenever the reactor coolant system temperature is greater than 215°F and primary containment integrity is required." These differences have caused uncertainty in applying the TS requirements since the RCSIVs also perform a primary containment isolation function following a design basis loss of coolant accident (LOCA). To be conservative, Nine Mile Point Nuclear Station, LLC (NMPNS) has been applying the requirements of both TS Section 3.2.7 and TS Section 3.3.4 to the RCSIVs. In addition, TS Section 3.3.4.b allows 4 hours for completion of the action to place at least one valve in each line having an inoperable valve in the mode corresponding to the isolated condition, whereas TS Section 3.2.7.b contains no time limit for performing the comparable action for an inoperable RCSIV. The proposed TS changes resolve these inconsistencies.

In addition, the current TS do not contain requirements for operability of the SDC system RCSIVs when in the cold shutdown and refueling reactor operating conditions. The proposed TS changes add such requirements to assure that SDC system isolation can be accomplished during a reactor vessel draindown event caused by a leak or line break in the SDC system.

Lastly, current TS Table 3.6.2b requires that the high area temperature instrumentation that automatically isolates the cleanup system and the SDC system be operable for all positions of the reactor mode switch (i.e., in the power operating, startup, hot shutdown, cold shutdown, and refueling conditions). However, similar to NUREG-1433, the high area temperature isolation instrumentation need not be operable in the cold shutdown and refueling conditions, when system energy levels are low and RCS temperature is typically maintained below the high area temperature isolation setpoints. The proposed TS changes delete cold shutdown and refueling as applicable operating conditions for this high area temperature isolation instrumentation.

4. TECHNICAL ANALYSIS

The following analysis addresses each proposed TS change outlined in the "Proposed Change" section of this attachment.

TS Sections 3.2.7 and 4.2.7, Reactor Coolant System Isolation Valves

Objective Statement

The "Objective" statement in TS Sections 3.2.7 and 4.2.7 is revised to include the primary containment isolation function that is performed by the RCSIVs in the event of a LOCA. These portions of the TS are descriptive and do not specify any limiting conditions for operation or surveillance requirements; thus, this is an administrative change.

Limiting Conditions for Operation – Reactor Coolant Temperature > 212°F

The applicable operating conditions specified in TS Sections 3.2.7.a and 3.2.7.b are revised from "during power operating conditions whenever the reactor head is on" to "whenever fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F." These revised applicable operating conditions are similar to operability requirements for other systems that are connected to the reactor coolant system (e.g., TS Section 3.1.4, Core Spray System, and TS Section 3.1.6, Control Rod Drive Pump Coolant Injection). With this change, the RCSIVs would be required to be operable in both the power operating condition and the hot shutdown condition. Inclusion of the hot shutdown condition is an additional restriction on plant operation that is appropriate since a DBA (LOCA or main steam line break) could cause a release of radioactive material to the primary containment when operating in the hot shutdown condition. The proposed TS changes ensure that, when operating in the hot shutdown condition, reactor coolant loss in the event of a rupture of a line connected to the RCS is minimized, and the release of radioactive material to the environment is consistent with the assumptions used in the analyses for a DBA.

Addition of a 4-hour time limit for completion of the action to place at least one valve in each line having an inoperable valve in the mode corresponding to the isolated condition provides a specific requirement for completion of the required action. The 4-hour completion time is the same as that currently allowed for an inoperable PCIV (TS Section 3.3.4.b) and is reasonable considering the time required to isolate the affected line and the relative importance of supporting reactor coolant system and primary containment integrity during the power operating and hot shutdown conditions. The 4-hour completion time is also consistent with NUREG-1433.

Limiting Conditions for Operation – Reactor Coolant Temperature ≤ 212°F

Operability requirements are added for the RCSIVs in the SDC system (proposed TS Section 3.2.7.d), requiring that these valves be operable whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F (encompassing the cold shutdown and refueling reactor operating conditions). This change is an additional restriction on plant operation. Operability of these valves provides protection against potential draining of the reactor vessel through the SDC system during shutdown conditions, which is when the SDC system is normally operated.

Appropriate actions, comparable to those contained in NUREG-1433 (Section 3.6.1.3, Condition H), have been added for when the valves cannot be isolated or restored within the 4-hour limit. If a SDC system isolation valve becomes inoperable whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F, proposed TS Section 3.2.7.e requires that, within 4 hours, at least one valve in each line having an inoperable valve is in the mode corresponding to the isolated condition. However, if the SDC function is needed to provide core cooling, isolating the SDC line is not desirable. Proposed TS Section 3.2.7.f allows the SDC line to remain unisolated provided action is immediately initiated to suspend OPDRVs. If suspending the OPDRVs would result in closing the SDC

system isolation valves, an alternative action is provided to immediately initiate action to restore the valve(s) to operable status. This allows the SDC system to remain in service while actions are being taken to restore the valve(s). Either of the actions identified in proposed TS Section 3.2.7.f must continue until OPDRVs are suspended or the valves are restored to operable status. Operation with the SDC system in service is not considered an OPDRV so long as system integrity is maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system.

Based on the above discussion, the requirements of proposed new TS Sections 3.2.7.d, 3.2.7.e, and 3.2.7.f provide an appropriate balance between the decay heat removal and reactor coolant system isolation functions of the SDC system.

TS Sections 3.6.2 and 4.6.2, Protective Instrumentation

Main Steam and Cleanup System Isolation – Low-Low Reactor Water Level Function

The applicable operating conditions specified in TS Table 3.6.2b for main steam and cleanup system isolation on low-low reactor water level are revised to include the hot shutdown condition (reactor coolant temperature > 212°F), consistent with the proposed revisions to the SDC system RCSIV operability requirements. This change is an additional restriction on plant operation that is appropriate since a DBA could cause a release of radioactive material to the primary containment when operating in the hot shutdown condition. The proposed TS change ensures that, when operating in the hot shutdown condition, reactor coolant loss in the event of a rupture of a line connected to the RCS is minimized, and the release of radioactive material to the environment is consistent with the assumptions used in the analyses for a DBA.

SDC System Isolation – Low-Low Reactor Water Level Function

The proposed changes to TS Table 3.6.2b add requirements that the low-low reactor vessel water level instrumentation that initiates isolation of the SDC system be operable with the reactor mode switch in the Shutdown and Refuel positions. These requirements are additional restrictions on plant operation that are consistent with the proposed revisions to the SDC system RCSIV operability requirements.

- In the hot shutdown condition (reactor coolant temperature > 212°F), a DBA could cause a release of radioactive material to the primary containment; thus, it is appropriate that the low-low reactor vessel water level instrumentation that automatically initiates closure of the SDC system RCSIVs be required to be operable, with two trip systems operable or in the tripped condition. The proposed TS change ensures that, when operating in the hot shutdown condition, reactor coolant loss in the event of a rupture of a SDC line is minimized, and the release of radioactive material to the environment is consistent with the assumptions used in the analyses for a DBA.

- In the cold shutdown and refueling conditions, when the SDC system is normally operated, automatic closure of the SDC system RCSIVs will protect against potential draining of the reactor vessel through the SDC system suction line caused by a leak or line break in the SDC system. Only one trip system (with two instrument channels) is required to be operable so long as SDC system integrity is maintained [proposed TS Table 3.6.2b, Note (j)]. With SDC system integrity maintained (i.e., the piping is intact and no maintenance is being performed that has a potential for draining the reactor vessel through the system), both trip systems are not required since one trip system can isolate the SDC suction line (by closing one of the suction isolation valves).

Appropriate actions, comparable to those described in NUREG-1433 (Section 3.3.6.1, Required Actions J.1 and J.2), have been added for when the channel(s) of the function is inoperable in the cold shutdown and refueling conditions. If one low-low water level instrument channel in a required trip system becomes inoperable and cannot be restored or placed in the tripped condition within the allowed time, the associated SDC line should be isolated. However, if the SDC function is needed to provide core cooling, isolating the SDC line is not desirable. Proposed TS Table 3.6.2b, Note (j), allows the SDC line to remain unisolated and the system to remain in service provided action is immediately initiated to restore the channel to operable status. The alternative action is to immediately initiate action to isolate the SDC system, which may require that alternate decay heat removal capabilities be provided. Either of these actions must continue until the channel is restored to operable status or the SDC system is isolated.

Based on the above discussion, the proposed changes to TS Table 3.6.2b regarding operability of the low-low reactor vessel water level instrumentation that initiates isolation of the SDC system are consistent with the proposed revisions to the SDC system RCSIV operability requirements and provide an appropriate balance between the decay heat removal and reactor coolant system isolation functions of the SDC system.

SDC and Cleanup System Isolation – High Area Temperature Functions

The applicable operating conditions specified in TS Table 3.6.2b for cleanup system and SDC system isolation on high area temperature are revised to delete the cold shutdown and refueling reactor operating conditions, consistent with the proposed revisions to the RCSIV operability requirements and similar to NUREG-1433. In the cold shutdown and refueling conditions, the probability and consequences of DBAs are reduced due to the pressure and temperature limitations of these operating conditions. Also, system isolation on high area temperature would likely not occur in the event of system leakage or line break since RCS temperature during the cold shutdown and refueling conditions is typically maintained below the high area temperature isolation setpoints (190°F for the cleanup system area and 170°F for the SDC system area).

Table 4.6.2b – Editorial Change

The proposed change adds the word "cooling" after "shutdown" in the description contained in the parentheses under the "Parameter" column, under the heading of PRIMARY COOLANT ISOLATION. This is an editorial clarification only and does not modify any TS operability or surveillance requirements.

In summary, the proposed changes to TS Sections 3.2.7 and 3.6.2 extend the operability requirements for the RCSIVs to include the hot shutdown condition, thereby ensuring that reactor coolant loss in the event of a rupture of a line connected to the RCS is minimized, and the release of radioactive material to the environment is consistent with the assumptions used in the analyses for a DBA. Also, new operability requirements for the SDC system RCSIVs are added for the cold shutdown and refueling operating conditions, thereby enhancing shutdown safety. These changes are additional restrictions on plant operation. Lastly, unnecessary operability requirements for the cleanup system and SDC system high area temperature isolation instrumentation are deleted, consistent with the proposed revisions to the RCSIV operability requirements.

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) such activities will be

conducted in compliance with the Commission's regulations; and (3) the issuance of the requested license amendment will not be inimical to the common defense and security or to the health and safety of the public.

5. NO SIGNIFICANT HAZARDS DETERMINATION

Nine Mile Point Nuclear Station, LLC (NMPNS) is requesting a revision to Renewed Operating License No. DPR-63 for Nine Mile Point Unit 1 (NMP1). The proposed Technical Specification (TS) changes would modify the conditions for which reactor coolant system isolation valves (RCSIVs) and associated isolation instrumentation must be operable to include the hot shutdown reactor operating condition (i.e., when fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F). In addition, new requirements are proposed to require that the RCSIVs in the shutdown cooling (SDC) system and associated isolation instrumentation be operable during the cold shutdown reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F) and the refueling reactor operating condition (fuel is in the reactor vessel and the reactor coolant temperature is less than 212°F). These proposed changes will enhance shutdown safety by requiring operability of RCSIVs during conditions other than the power operating condition, and are similar in concept to primary containment isolation valve operability requirements contained in NUREG-1433, Standard Technical Specifications – General Electric Plants, BWR/4, Revision 3.1. Lastly, unnecessary operability requirements for the cleanup system and SDC system high area temperature isolation instrumentation would be deleted, consistent with the proposed revisions to the RCSIV operability requirements.

NMPNS has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed changes provide more stringent requirements for operation of NMP1. These include requiring operability of RCSIVs and associated isolation instrumentation during the hot shutdown condition and requiring RCSIVs in the SDC system and associated instrumentation to be operable during the cold shutdown and refueling operating conditions. Requiring RCSIV operability during the hot shutdown operating condition ensures that reactor coolant loss in the event of a rupture of a line connected to the reactor coolant system (RCS) is minimized, and the release of radioactive material to the environment is consistent with the assumptions used in the analyses for design basis accidents. Requiring operability of the RCSIVs in the SDC system during the cold shutdown and refueling operating conditions provides protection against potential draining of the reactor vessel through the SDC system during shutdown conditions, which is when the SDC system is normally operated.

   In addition, operability requirements for the cleanup system and SDC system high area temperature isolation instrumentation are revised to be consistent with the proposed revisions to the RCSIV operability requirements and with NUREG-1433. The high area temperature isolation instrumentation need not be operable in the cold shutdown and refueling conditions, since the probability and consequences of design basis accidents are reduced due to the pressure and temperature limitations of these operating conditions. Also, system isolation on high area

temperature would likely not occur in the event of system leakage or line break since RCS temperature during the cold shutdown and refueling conditions is typically maintained below the high area temperature isolation setpoints (190°F for the cleanup system area and 170°F for the SDC system area).

The revised operability requirements for the RCSIVs and associated isolation instrumentation do not result in operation that would make an accident more likely to occur and do not alter assumptions relative to mitigation of a previously evaluated accident. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed changes to the TS operability requirements for the RCSIVs and associated isolation instrumentation do not alter or involve any design basis accident initiators. The proposed changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in the methods governing normal plant operation. The proposed changes do impose different RCSIV operability requirements that are more stringent than existing requirements, and incorporate RCSIV isolation instrumentation operability requirements that are consistent with the RCSIV requirements and with NUREG-1433. These changes continue to be consistent with the assumptions in the safety analyses and licensing basis. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The proposed changes to the TS operability requirements for the RCSIVs and associated isolation instrumentation ensure that RCSIV closure will occur when required to mitigate the consequences of design basis accidents. The proposed changes also ensure that SDC system isolation can be accomplished to protect against potential draining of the reactor vessel through the SDC system during shutdown conditions, which is when the SDC system is normally operated. The imposition of these revised RCSIV operability requirements either has no impact on or increases the margin of plant safety. The plant responses to accidents will not be adversely affected, and the accident mitigation equipment will continue to function as assumed in the accident analyses. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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

6. ENVIRONMENTAL ASSESSMENT

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7. REFERENCES

1. NUREG-1433, "Standard Technical Specifications – General Electric Plants, BWR/4," Revision 3.1, December 1, 2005

2. Letter from G. E. Edison (NRC) to B. R. Sylvia (NMPC) dated March 20, 1995, Issuance of Amendment for Nine Mile Point Nuclear Station Unit No. 1 (TAC No. M89786)

8. REGULATORY COMMITMENTS

The following table identifies those actions committed to by NMPNS in this submittal. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

REGULATORY COMMITMENTS	DUE DATE
None	None

ATTACHMENT (2)

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGES (MARKED UP PAGES)

TS Pages

108
109
205
207
209
213

LIMITING CONDITION FOR OPERATION

3.2.7 REACTOR COOLANT SYSTEM ISOLATION VALVES

Applicability:

Applies to the operating status of the system of isolation valves on lines connected to the reactor coolant system.

Objective:

To assure the capability of the reactor coolant system isolation valves to minimize reactor coolant loss in the event of a rupture of a line connected to the nuclear steam supply system, Insert 1

Specification:

Insert 3

a. ~~During power operating conditions whenever the reactor head is on,~~ all reactor coolant system isolation valves on lines connected to the reactor coolant system shall be operable except as specified in "b" below. Specification 3.2.7.b

Insert 4

b. In the event any isolation valve becomes inoperable, the system shall be considered operable provided that within 4 hours at least one valve in each line having an inoperable valve is in the mode corresponding to the isolated condition, except as noted in Specification 3.1.1.e.

SURVEILLANCE REQUIREMENT

4.2.7 REACTOR COOLANT SYSTEM ISOLATION VALVES

Applicability:

Applies to the periodic testing requirement for the reactor coolant system isolation valves.

Objective:

To assure the capability of the reactor coolant system isolation valves to minimize reactor coolant loss in the event of a rupture of a line connected to the nuclear steam supply system, Insert 2

Specification:

The reactor coolant system isolation valves surveillance shall be performed as indicated below.

a. At least once per operating cycle the operable automatically initiated power-operated isolation valves shall be tested for automatic initiation and closure times.

b. Additional surveillances shall be performed as required by Specification 6.5.4.

INSERT 1 (for TS page 108; TS Section 3.2.7 – Objective)

and to minimize potential leakage paths from the primary containment in the event of a loss-of-coolant accident.

INSERT 2 (for TS page 108; TS Section 4.2.7 – Objective)

and to limit potential leakage paths from the primary containment in the event of a loss-of-coolant accident.

INSERT 3 (for TS page 108; TS Section 3.2.7.a)

Whenever fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F,

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INSERT 4 (for TS page 108; TS Section 3.2.7.b)

whenever fuel is in the reactor vessel and the reactor coolant temperature is greater than 212°F,

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
c. If Specifications 3.2.7a and b above are not met, initiate normal orderly shutdown within one hour and have reactor in the cold shutdown condition within ten hours. Insert 5	c. At least once per quarter the feedwater and main-steam line power-operated isolation valves shall be exercised by partial closure and subsequent reopening. d. At least once per plant cold shutdown the feedwater and main steam line power-operated isolation valves shall be fully closed and reopened, unless this test has been performed within the previous 92 days.

INSERT 5 (for TS page 109; TS Section 3.2.7)

d. Whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F, the isolation valves on the shutdown cooling system lines connected to the reactor coolant system shall be operable except as specified in Specification 3.2.7.e below.

e. In the event any shutdown cooling system isolation valve becomes inoperable whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F, the system shall be considered operable provided that, within 4 hours, at least one valve in each line having an inoperable valve is in the mode corresponding to the isolated condition.

f. If Specifications 3.2.7.d and 3.2.7.e above are not met, either:

   (1) Immediately initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs); or

   (2) Immediately initiate action to restore the valve(s) to operable status.

TABLE 3.6.2b

INSTRUMENTATION THAT INITIATES PRIMARY COOLANT SYSTEM OR CONTAINMENT ISOLATION

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable: Shutdown	Refuel	Startup	Run
PRIMARY COOLANT ISOLATION							
(Main Steam, Cleanup, and Shutdown Cooling)							
(1) Low-Low Reactor Water Level	2	2(f)	≥ 5 inches (Indicator Scale)			x	x
Insert 6							
(2) Manual	2	1	---	x	x	x	x
MAIN-STEAM-LINE ISOLATION							
(3) High Steam Flow Main-Steam Line	2	2(f)	≤ 105 psid			x	x

INSERT 6 (for TS page 205; TS Table 3.6.2b)

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
(a) Main Steam and Cleanup	2	2(f)	≥ 5 inches (Indicator Scale)	(i)		x	x
(b) Shutdown Cooling	2(j)	2(f)(j)	≥ 5 inches (Indicator Scale)	x	x	x	x

TABLE 3.6.2b (cont'd)

INSTRUMENTATION THAT INITIATES PRIMARY COOLANT SYSTEM OR CONTAINMENT ISOLATION

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable: Shutdown	Refuel	Startup	Run
CLEANUP SYSTEM ISOLATION							
(8) High Area Temperature	1	2(g)	≤ 190°F	(i) ~~x~~	~~x~~ a	x	x
SHUTDOWN COOLING SYSTEM ISOLATION							
(9) High Area Temperature	1	1	≤ 170°F	(i) ~~x~~	~~x~~ a	x	x
CONTAINMENT ISOLATION							
(10) Low-Low Reactor Water	2	2(f)	≥ 5 inches (Indicator Scale)	(c)		x	x

TABLE 4.6.2b

INSTRUMENTATION THAT INITIATES PRIMARY COOLANT SYSTEM OR CONTAINMENT ISOLATION

Surveillance Requirement

Parameter	Sensor Check	Instrument Channel Test	Instrument Channel Calibration
PRIMARY COOLANT ISOLATION (Main Steam, Cleanup and Shutdown Cooling)			
(1) Low-Low Reactor Water Level	Once/day	Once per 3 months[d]	Once per 3 months[d]
(2) Manual	---	Once during each major refueling outage	---
MAIN-STEAM-LINE ISOLATION			
(3) High Steam Flow Main-Steam Line	Once/day	Once per 3 months[d]	Once per 3 months[d]
(4) Deleted			
(5) Low Reactor Pressure	Once/day	Once per 3 months[d]	Once per 3 months[d]

(g) A channel may be placed in an inoperable status for up to 6 hours for required surveillances without placing the Trip System in tripped condition provided at least one Operable Instrument Channel in the same Trip System is monitoring that Parameter.

With the number of Operable channels one less than required by the Minimum Number of Operable Instrument Channels for the Operable Trip System, either

1. Place the inoperable channel(s) in the tripped condition within 24 hours.

or

2. Take the ACTION required by Specification 3.6.2a for that Parameter.

(h) Only applicable during startup mode while operating in IRM range 10.

Insert 7

INSERT 7 (for TS page 213, TS Table 3.6.2b)

(i) May be bypassed in the cold shutdown condition.

(j) In the cold shutdown and refueling conditions, only one Operable Trip System is required provided shutdown cooling system integrity is maintained. With one of the two required Operable Channels in the required Trip System not operable, place the inoperable channel in the tripped condition within 12 hours. Otherwise, either:

1. Immediately initiate action to restore the channel to operable status.

or

2. Immediately initiate action to isolate the shutdown cooling system.

ATTACHMENT (3)

PROPOSED TECHNICAL SPECIFICATION (TS) BASES CHANGES (MARKED UP PAGES)

The current versions of the following Technical Specification Bases pages have been marked-up by hand to reflect the proposed changes. These Bases pages are provided for information only and do not require NRC approval.

TS Bases Pages

115
150
249

The list of reactor coolant isolation valves is contained in the procedure governing controlled lists and have been removed from the Technical Specifications per Generic Letter 91-08. Revisions will be processed in accordance with Quality Assurance Program requirements.

Insert A

Double isolation valves are provided in lines which connect to the reactor coolant system to assure isolation and minimize reactor coolant loss in the event of a line rupture. The specified valve requirements assure that isolation is already accomplished with one valve shut or provide redundancy in an open line with two operative valves. Except where check valves are used as one or both of a set of double isolation valves, the isolation valves shall be capable of automatic initiation. Valve closure times are selected to minimize coolant losses in the event of the specific line rupturing and are procedurally controlled. Using the longest closure time on the main-steam-line valves following a main-steam-line break (Section XV C.1.0)[1], the core is still covered by the time the valves close. Following a specific system line break, the cleanup and shutdown cooling closing times will upon initiation from a low-low level signal limit coolant loss such that the core is not uncovered. Feedwater flow would quickly restore coolant levels to prevent clad damage. Closure times are discussed in Section VI-D.1.0[1].

Insert B

The valve operability test intervals are based on periods not likely to significantly affect operations, and are consistent with testing of other systems. Results obtained during closure testing are not expected to differ appreciably from closure times under accident conditions as in most cases, flow helps to seal the valve.

The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1×10^{-7} (Fifth Supplement, p. 115)[2] that a line will not isolate. Additional surveillances are in accordance with the Inservice Testing Program described in Specification 6.5.4.

Insert C

(1) UFSAR
(2) FSAR
(3) Letter from G.E. Edison (NRC) to B.R. Sylvia (NMPC) dated March 20, 1995, Issuance of Amendment for Nine Mile Point Nuclear Station Unit No. 1 (License Amendment No. 154)

Add

INSERT A (for TS page 115; Bases for TS Sections 3.2.7 and 4.2.7)

Closure of the isolation valves also minimizes potential leakage paths from the primary containment in the event of a loss-of-coolant accident. In addition, whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F (encompassing the cold shutdown and refueling operating conditions), closure of the shutdown cooling system isolation valves ensures that the reactor vessel water level does not drop below the top of the active fuel during a vessel draindown event caused by a leak or line break in the shutdown cooling system.

INSERT B (for TS page 115; Bases for TS Sections 3.2.7 and 4.2.7)

[Note: This paragraph revised and moved from TS page 150, Bases for TS Sections 3.3.4 and 4.3.4]

It is not intended that compliance with Technical Specification actions would prevent changes in modes or other specified conditions that are part of a shutdown of the unit. Accordingly, if during a plant shutdown any shutdown cooling system isolation valve becomes inoperable for closing while placing shutdown cooling in operation, it is recommended not to take the action specified in 3.2.7.b to isolate one valve in the line having the inoperable valve within 4 hours. This is because, once the line is isolated, the Technical Specifications preclude unisolating the line unless it is for the purpose of demonstrating operability of the inoperable valve. It is, therefore, recommended to take the action specified in 3.2.7.c within 4 hours (instead of the action specified in 3.2.7.b) and proceed with the shutdown actions using shutdown cooling as necessary to reduce reactor coolant temperature to less than 212°F within the following 10 hours. Thereafter, the actions specified in 3.2.7.e and 3.2.7.f would need to be met. An inoperable shutdown cooling isolation valve may be opened with the shutdown cooling permissives met (reactor pressure ≤ 120 psig and temperature ≤ 350°F) in order to comply with the shutdown actions specified in 3.2.7.c.

INSERT C (for TS page 115; Bases for TS Sections 3.2.7 and 4.2.7)

During plant operation, the isolation valves in the shutdown cooling system are normally closed. In lieu of performing Type C leak rate testing on these isolation valves, a water seal is provided to prevent containment atmosphere leakage through these valves in the event of an accident requiring primary containment isolation. The seal water, supplied from the core spray system, would pressurize the piping between the inboard and outboard isolation valves. To prevent a spurious or inadvertent valve opening from defeating the water seal, the motor-operated shutdown cooling system isolation valves are required to be de-activated (power is removed) during normal plant operation. Thus, the motor-operated shutdown cooling system isolation valves are considered operable when the valves are closed and de-activated and the water seal is capable of performing its function.

When the shutdown cooling system is placed in service for plant cooldown (with reactor pressure ≤ 120 psig and temperature ≤ 350°F), power for the motor-operated isolation valves must be restored and the valves opened. Should a loss of coolant accident occur at this time, failure of an isolation valve to close upon receipt of an isolation signal could cause a loss of the water seal. The risk associated with this potential single failure has been determined to be acceptable based on the low probability of a core damage event occurring during shutdown cooling system operation [(3)].

Specification 3.2.7.d requires operability of the shutdown cooling system isolation valves whenever fuel is in the reactor vessel and the reactor coolant temperature is less than or equal to 212°F. If any isolation valve becomes inoperable, Specification 3.2.7.e requires that, within 4 hours, at least one valve in each line having an inoperable valve is in the mode corresponding to the isolated condition. However, if the shutdown cooling function is needed to provide core cooling, isolating the shutdown cooling line is not desirable. Specification 3.2.7.f allows the shutdown cooling line to remain unisolated provided action is immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs). If suspending the OPDRVs would result in closing the shutdown cooling system isolation valves, an alternative action is provided to immediately initiate action to restore the valve(s) to operable status. This allows the shutdown cooling system to remain in service while actions are being taken to restore the valve(s). The term "immediately" means that the action should be pursued without delay and in a controlled manner. Either of the actions identified in Specification 3.2.7.f must continue until OPDRVs are suspended or the valves are restored to operable status. Operation with the shutdown cooling system in service is not considered an OPDRV so long as system integrity is maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system. In addition, with the reactor coolant temperature less than or equal to 212°F, the water seal function is not required to consider the shutdown cooling system isolation valves operable since primary containment integrity is not required with reactor coolant temperature less than or equal to 215°F.

BASES FOR 3.3.4 AND 4.3.4 PRIMARY CONTAINMENT ISOLATION VALVES

The list of primary containment isolation valves is contained in the procedure governing controlled lists and have been removed from the Technical Specifications per Generic Letter 91-08. Revisions will be processed in accordance with Quality Assurance Program requirements.

Double isolation valves are provided on lines penetrating the primary containment and open to the free space of the containment. Closure of one of the valves in each line would be sufficient to maintain the integrity of the pressure suppression system. Except where check valves are used as one or both of a set of double isolation valves, the isolation valves shall be capable of automatic initiation. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a loss-of-coolant accident. Details of the isolation valves are discussed in Section VI-D. (1) For allowable leakage rate specification, see Section 3.3.3/4.3.3.

~~It is not intended that compliance with Technical Specification actions would prevent changes in modes or other specified conditions that are part of a shutdown of the unit. Accordingly, since Limiting Condition for Operation (LCO) 3.3.4 (in addition to LCO 3.2.7) applies to the shutdown cooling system containment isolation valves, if during a plant shutdown any shutdown cooling containment isolation valve becomes inoperable for closing while placing shutdown cooling in operation, it is recommended not to take the action specified in 3.3.4.b to isolate one valve in the line having the inoperable valve within 4 hours. This is because, once the line is isolated, the Technical Specifications preclude unisolating the line unless: 1) it is for the purpose of demonstrating operability of the inoperable valve or 2) the inoperable valve is no longer required to be operable (i.e., reactor coolant temperature less than 215°F). It is, therefore, recommended to take the action specified in 3.3.4.c within 4 hours (instead of the action specified in 3.3.4.b) and proceed with the shutdown actions using shutdown cooling as necessary to reduce reactor coolant temperature to less than 215°F within the following 10 hours. An inoperable shutdown cooling containment isolation valve may be opened with the shutdown cooling permissives met (reactor pressure ≤ 120 psig and temperature ≤ 350°F) in order to comply with the shutdown actions specified in 3.3.4.c.~~

Moved to TS page 115

For the design basis loss-of-coolant accident fuel rod perforation would not occur until the fuel temperature reached 1700°F which occurs in approximately 100 seconds. (2) The required closing times for all primary containment isolation valves are established to prevent fission product release through lines connecting to the primary containment.

For reactor coolant system temperatures less than 215°F, the containment could not become pressurized due to a loss-of-coolant accident. The 215°F limit is based on preventing pressurization of the reactor building and rupture of the blowout panels.

The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1×10^{-7} that a line will not isolate (Fifth Supplement, p. 115). (3) More frequent testing for valve operability results in a more reliable system.

Each reactor operating condition has a related reactor mode switch position for the safety system. The instrumentation system operability for each mode switch position is based on the requirements of the related safety system. For example, the specific high drywell pressure trip systems must be tripped or operable any time core spray, containment spray, automatic depressurization or containment isolation functions are required.

In instrumentation systems where two trip systems are required to initiate action, either both trip systems are operable or one is tripped. Having one trip system already tripped does not decrease the reliability in terms of initiating the desired action. However, the probability of spurious actuation is increased. Certain instrument channels or sensor inputs to instrument channels may be bypassed without affecting safe operation. The basis for allowing bypassing of the specified SRM's, IRM's, LPRM's and APRM's is discussed in Volume I (Section VII-C.1.2)*. The high area temperature isolation function for the cleanup system has one trip system. There are three instrument channels; each has four sensor inputs. Only two instrument channels are required since the area covered by any one sensor is also covered by a sensor in one of the other two instrument channels. The shutdown system also has one trip system for high area temperature isolation. However, since the area of concern is much smaller, only one instrument channel is provided. Four sensors provide input to the channel. Since the area covered is relatively small only three of the four sensors are required to be operable in order to assure isolation when needed.

Manual initiation is available for scram, reactor isolation and containment isolation. In order to manually initiate other systems, each pump and each valve is independently initiated from the control room. Containment spray raw water cooling is not automatically initiated. Manual initiation of each pump is required as discussed in 3.3.7 above.

Insert D

*FSAR; Letter, R.R. Schneider to A. Giambusso, dated November 15, 1973

INSERT D (for TS page 249; Bases for TS Sections 3.6.2 and 4.6.2)

Table 3.6.2b requires that the low-low reactor vessel water level instrumentation that initiates isolation of the shutdown cooling system be operable with the reactor mode switch in the Shutdown and Refuel positions. Two trip systems must be operable or in the tripped condition in the hot shutdown condition. However, in the cold shutdown and refueling conditions, only one trip system (with two instrument channels) must be operable so long as shutdown cooling system integrity is maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system. If one low-low water level instrument channel in a required Trip System becomes inoperable and cannot be restored or placed in the tripped condition within the allowed time, the associated shutdown cooling line should be isolated. However, if the shutdown cooling function is needed to provide core cooling, isolating the shutdown cooling line is not desirable. Table 3.6.2b, Note (j), allows the shutdown cooling line to remain unisolated and the system to remain in service provided action is immediately initiated to restore the channel to operable status. The alternative action is to immediately initiate action to isolate the shutdown cooling system, which may require that alternate decay heat removal capabilities be provided. The term "immediately" means that the action should be pursued without delay and in a controlled manner. Either of these actions must continue until the channel is restored to operable status or the shutdown cooling system is isolated.