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RS-20-016
April 13, 2020

10 CFR 50.90

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

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-59
NRC Docket No. 50-333

LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69
NRC Docket No. 50-410

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos.50-277, and 50-278

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Application to Revise Technical Specifications to Adopt TSTF-566, "Revise Actions for Inoperable RHR Shutdown Cooling Systems"

Reference: Letter from Victor G. Cusumano (U.S. NRC) to Technical Specifications Task Force, "Final Safety Evaluations of Technical Specifications Task Force Traveler TSTF-566, Revision 0, 'Revise Actions for Inoperable RHR Shutdown Cooling Subsystems,'" dated February 21, 2019

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (EGC), requests an amendment to Facility Operating License (FOL) No. NPF-62 for Clinton Power Station, Unit 1, Renewed FOL Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station, Units 2 and 3, Renewed FOL No. DPR-59 for James A. FitzPatrick Nuclear Power Plant, Renewed FOL Nos. NPF-11 and NPF-18 for LaSalle County Station, Units 1 and 2, Renewed FOL No. NPF-69 for Nine Mile Point Nuclear Station, Unit 2, Renewed FOL Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station, Units 2 and 3, and Renewed FOL Nos. DPR-29 and DPR-30 for Quad Cities Nuclear Power Station, Units 1 and 2. The proposed amendment is consistent with previously NRC-approved Industry/Technical Specifications Task Force Traveler 566 (TSTF-566), Revision 0, "Revise Actions for Inoperable RHR Shutdown Cooling Systems."

Attachment 1 provides a description and assessment of the proposed change. Attachment 2 provides the existing TS pages marked up to show the proposed change. Attachment 3 provides TS Bases pages marked up to show the associated TS Bases changes and is provided for information only.

The proposed change has been reviewed by the Plant Operations Review Committees at each station in accordance with the requirements of the EGC Quality Assurance Program.

EGC requests approval of the proposed change by April 13, 2021. Once approved, the amendment shall be implemented within 60 days.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), EGC is notifying the State of Illinois, the State of New York, the State of Pennsylvania, and the State of Maryland of this application for license amendment by transmitting a copy of this letter and its attachments to the designated State Officials.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mrs. Linda M. Palutsis at (630) 657-2821.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 13th day of April 2020.

Respectfully,

Patrick R. Simpson
Sr. Manager Licensing

Attachments:
1. Description and Assessment
2. Markup of Proposed Technical Specifications Pages
3. Markup of Proposed Technical Specifications Bases Pages (For Information Only)

cc: NRC Regional Administrator, Region I
NRC Regional Administrator, Region III
NRC Senior Resident Inspector – Clinton Power Station
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector – James A. FitzPatrick Nuclear Power Plant
NRC Senior Resident Inspector – LaSalle County Station
NRC Senior Resident Inspector – Nine Mile Point Nuclear Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
Illinois Emergency Management Agency – Division of Nuclear Safety
A. L. Peterson, NYSERDA
R. R. Janati, Pennsylvania Bureau of Radiation Protection
D. Tancabel, State of Maryland

ATTACHMENT 1
Description and Assessment

1.0 DESCRIPTION

Exelon Generation Company, LLC (EGC), requests adoption of Technical Specifications Task Force Traveler 566 (TSTF-566), "Revise Actions for Inoperable RHR-Shutdown Cooling Subsystems," which is an approved change to the Improved Standard Technical Specifications (ISTS), into Clinton Power Station, Unit 1, Dresden Nuclear Power Station, Units 2 and 3, James A. FitzPatrick Nuclear Power Plant, LaSalle County Station, Units 1 and 2, Nine Mile Point Nuclear Station, Unit 2, Peach Bottom Atomic Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, Technical Specifications (TS). The proposed amendment revises the TS actions applicable when a residual heat removal (RHR) shutdown cooling subsystem is inoperable.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

EGC has reviewed the safety evaluation for TSTF-566 provided to the Technical Specifications Task Force in a letter dated February 21, 2019 (Reference 2). This review included a review of the NRC evaluation, as well as the information provided in TSTF-566 (Reference 1). As described below, EGC has concluded that the justifications presented in TSTF-566 and the safety evaluation prepared by the NRC are applicable to Clinton Power Station, Unit 1, Dresden Nuclear Power Station, Units 2 and 3, James A. FitzPatrick Nuclear Power Plant, LaSalle County Station, Units 1 and 2, Nine Mile Point Nuclear Station, Unit 2, Peach Bottom Atomic Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, and justify this amendment for the incorporation of the changes to these plants TS.

2.2 Variations

Some EGC plants TS utilize different numbering than the Standard TS on which TSTF-566 was based (Reference 3 and 4). Additionally, Dresden utilizes a different title and system name designation. The specific differences between the plant TS and TSTF-566 are described in Table 1. These differences are administrative and do not affect the applicability of TSTF-566 to the EGC plants TS.

Table 1. Specific Differences Between EGC TS and TSTF-566 (NUREG-1433)

TSTF-566 (NUREG-1433)	Dresden	FitzPatrick	Peach Bottom	Quad Cities
3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown	Numbering and title difference 3.4.7 Shutdown Cooling (SDC) System—Hot Shutdown	Numbering difference 3.4.7	Numbering difference 3.4.7	Numbering difference 3.4.7
3.4.8 Action B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.	Numbering and system name designation difference 3.4.7 Action B.1 Initiate action to restore SDC subsystem(s) to OPERABLE status.	None	None	None
3.4.9 Residual Heat Removal (RHR) Shutdown Cooling System - Cold Shutdown	Numbering and title difference 3.4.8 Shutdown Cooling (SDC) System—Cold Shutdown	Numbering difference 3.4.8	Numbering difference 3.4.8	Numbering difference 3.4.8
3.4.9 Action B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.	Numbering and system name designation difference 3.4.8 Action B.1 Initiate action to restore SDC subsystem(s) to OPERABLE status.	None	None	None

Note: No differences were identified between NUREG-1434 and plant TS (i.e., Clinton, LaSalle, and Nine Mile Point 2).

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination Analysis

EGC requests adoption of TSTF-566, "Revise Actions for Inoperable RHR Shutdown Cooling Subsystems," which is an approved change to the ISTS, into the Clinton Power Station, Unit 1, Dresden Nuclear Power Station, Units 2 and 3, James A. FitzPatrick Nuclear Power Plant, LaSalle County Station, Units 1 and 2, Nine Mile Point Nuclear Station, Unit 2, Peach Bottom Atomic Power Station, Units 2 and 3, and Quad Cities Nuclear Power Station, Units 1 and 2, TS. The proposed amendment revises the TS actions applicable when a residual heat removal (RHR) shutdown cooling subsystem is inoperable.

EGC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) 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 change revises the actions to be taken when an RHR shutdown cooling subsystem is inoperable. The RHR System in the shutdown cooling mode performs the important safety function of removing decay heat from the reactor coolant system during shutdown. The RHR System in the shutdown cooling mode is not an initiator of any accident previously evaluated or assumed to mitigate any accident previously evaluated. The design and function of the RHR System are not affected by the proposed change.

   Therefore, the proposed 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 previously evaluated?

   Response: No

   The proposed change revises the actions to be taken when an RHR shutdown cooling subsystem is inoperable. The proposed change does not affect the design function or operation of the RHR shutdown cooling subsystems. No new equipment is being installed as a result of the proposed change. The proposed change only affects the actions taken when an RHR shutdown cooling subsystem is inoperable, so no new failure mechanisms are created.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No

   The proposed change revises the actions to be taken when an RHR shutdown cooling subsystem is inoperable. The proposed change does not change any specific values or controlling parameters that define margin in the design or licensing basis. No safety limits are affected by the proposed change. The RHR System in the shutdown cooling mode removes decay heat from the reactor coolant system during shutdown. The proposed change does not affect any design or safety limits associated with the RHR System.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, EGC concludes that the proposed change 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.

3.2 Conclusions

In conclusion, 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL CONSIDERATION

The proposed change 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 change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

5.0 REFERENCES

1. Letter from the Technical Specifications Task Force to the U.S. Nuclear Regulatory Commission, "Transmittal of TSTF-566, Revision 0, 'Revise Actions for Inoperable RHR Shutdown Cooling Subsystems,'" dated January 19, 2018

2. Letter from Victor G. Cusumano (U.S. NRC) to Technical Specifications Task Force, "Final Safety Evaluations of Technical Specifications Task Force Traveler TSTF-566, Revision 0, 'Revise Actions for Inoperable RHR Shutdown Cooling Subsystems,'" dated February 21, 2019

3. NUREG-1433, Standard Technical Specifications, General Electric BWR/4 Plants, Volume 1, Revision 4, dated April 2012

4. NUREG-1434, Standard Technical Specifications, General Electric BWR/6 Plants, Volume 1, Revision 4, dated April 2012

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.1 Clinton Power Station, Unit 1
Facility Operating License No. NPF-62

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4-23
3.4-24
3.4-26

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	A.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.	Immediately
	AND	
	A.2 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour
	AND	
	A.3 Be in MODE 4.	24 hours

(continued)

A.1

AND
Once per 24 hours thereafter

B. Required Action and associated Completion Time of Condition A not met.

B. 1 Initiate action to restore RHR Shutdown Cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1 Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation. AND B.2 Verify reactor coolant circulation by an alternate method. AND B.3 Monitor reactor coolant temperature and pressure.	Immediately 1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter Once per hour

C. → C.1, C.2, C.3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	----------NOTE---------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR cut in permissive pressure. ---------- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control program

(continued)

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

nued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. C. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1 C.1 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	B.2 C.2 Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.10.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.2 Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.7-1
3.4.7-2
3.4.8-1
3.4.8-2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Shutdown Cooling (SDC) System—Hot Shutdown

LCO 3.4.7 Two SDC subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one SDC subsystem shall be in operation.

---NOTES---

1. Both required SDC subsystems and recirculation pumps may be not in operation for up to 2 hours per 8 hour period.

2. One required SDC subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 3, with reactor vessel coolant temperature less than the SDC cut-in permissive temperature.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each SDC subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required SDC subsystems inoperable.	~~A.1~~ ~~Initiate action to restore required SDC subsystem(s) to OPERABLE status.~~ ~~AND~~	~~Immediately~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ A.1 Verify an alternate method of decay heat removal is available for each inoperable required SDC subsystem.	1 hour AND Once per 24 hours thereafter
	AND	
	~~A.3~~ Be in MODE 4.	~~24 hours~~ Immediately
~~B.~~ C. No required SDC subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ C.1 Initiate action to restore one required SDC subsystem or one recirculation pump to operation.	Immediately
	AND	
	~~B.2~~ C.2 Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.3~~ C.3 Monitor reactor coolant temperature and pressure.	Once per hour

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore SDC subsystem(s) to OPERABLE status.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 Shutdown Cooling (SDC) System—Cold Shutdown

LCO 3.4.8 Two SDC subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one SDC subsystem shall be in operation.

---NOTES---

1. Both required SDC subsystems may be not in operation during hydrostatic testing.

2. Both required SDC subsystems and recirculation pumps may be not in operation for up to 2 hours per 8 hour period.

3. One required SDC subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 4.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required SDC subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable required SDC subsystem.	1 hour AND Once per 24 hours thereafter

(continued)

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore SDC subsystem(s) to OPERABLE status.

Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ No required SDC subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.2~~ Monitor reactor coolant temperature and pressure.	Once per hour

C. → C.1

C.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one SDC subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.8.2	Verify SDC subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.3 James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-59

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.7-1
3.4.8-1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System-Hot Shutdown

LCO 3.4.7 Two RHR shutdown cooling subsystems shall be OPERABLE.

---NOTE---
One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 3, with reactor steam dome pressure less than the RHR cut in permissive pressure.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	~~A.1~~	~~Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.~~	~~Immediately~~
	~~AND~~		
	~~A.2~~ A.1	Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
	~~AND~~		
	~~A.3~~	~~Be in MODE 4.~~	~~24 hours~~ Immediately

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown

LCO 3.4.8 Two RHR shutdown cooling subsystems shall be OPERABLE.

NOTE
One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 4.

ACTIONS

NOTE
Separate Condition entry is allowed for each shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify each RHR shutdown cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position, or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.4 LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.9-1
3.4.9-2
3.4.10-2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown

LCO 3.4.9 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

----------NOTES----------

1. Both RHR shutdown cooling subsystems and recirculation pumps may be not in operation for up to 2 hours per 8 hour period.

2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 3 with reactor vessel pressure less than the RHR cut-in permissive pressure.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	~~A.1~~ ~~Initiate action to restore RHR shutdown cooling subsystem to OPERABLE status.~~ ~~AND~~	~~Immediately~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem. ~~AND~~ ~~A.3~~ ~~Be in MODE 4.~~	1 hour AND Once per 24 hours thereafter ~~24 hours~~ Immediately
~~B.~~ No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation. AND ~~B.2~~ Verify reactor coolant circulation by an alternate method. AND ~~B.3~~ Monitor reactor coolant temperature and pressure.	Immediately 1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter Once per hour

B. Required Action and associated Completion Time of Condition A not met.

A.1

C.

C.1

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

C.2

C.3

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND ~~B.2~~ Monitor reactor coolant temperature and pressure.	Once per hour

C.

C.1

C.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.10.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.5 Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.9-1
3.4.9-2
3.4.10-2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Residual Heat Removal (RHR) Shutdown Cooling System – Hot Shutdown

LCO 3.4.9 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

---NOTES---

1. Both RHR shutdown cooling subsystems and recirculation pumps may be not in operation for up to 2 hours per 8 hour period.

2. One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 3 with reactor steam dome pressure less than the RHR cut-in permissive pressure.

ACTIONS

---NOTE ---
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	~~A.1~~ ~~Initiate action to restore RHR shutdown cooling subsystem to OPERABLE status.~~ ~~AND~~	~~Immediately~~ (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ A.1 Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
	~~AND~~	
	~~A.3~~ ~~Be in MODE 4.~~	~~24 hours~~ Immediately
~~B.~~ C. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ C.1 Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	AND	
	~~B.2~~ C.2 Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.3~~ C.3 Monitor reactor coolant temperature and pressure.	Once per hour

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS (cont

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ C. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ C.1 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.2~~ C.2 Monitor reactor coolant temperature and pressure.	Once per hour

B. Required Action and associated Completion Time of Condition A not met.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.4.10.2	Verify RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.6 Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56

REVISED TECHNICAL SPECIFICATIONS PAGES

Peach Bottom Atomic Power Station, Unit 2

3.4-16
3.4-17
3.4-19
3.4-20

Peach Bottom Atomic Power Station, Unit 3

3.4-16
3.4-17
3.4-19
3.4-20

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown

LCO 3.4.7 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

---NOTES---

1. Both required RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One required RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 3, with reactor steam dome pressure less than the RHR shutdown cooling isolation pressure.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	~~A.1~~ ~~Initiate action to restore required RHR shutdown cooling subsystem(s) to OPERABLE status.~~ ~~AND~~	~~Immediately~~ (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ A.1 Verify an alternate method of decay heat removal is available for each required inoperable RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter
	~~AND~~	
	~~A.3~~ Be in MODE 4.	~~24 hours~~ Immediately
~~B.~~ No RHR shutdown cooling subsystem in operation. C. AND No recirculation pump in operation.	~~B.1~~ C.1 Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	AND	
	~~B.2~~ C.2 Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.3~~ C.3 Monitor reactor coolant temperature and pressure.	Once per hour

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown

LCO 3.4.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

----------NOTES----------

1. Both required RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One required RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 4.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable required RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter

(continued)

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ C. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ C.1 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.2~~ C.2 Monitor reactor coolant temperature and pressure.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program.
SR 3.4.8.2	----------NOTE---------- HPSW system related components are excluded. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown

LCO 3.4.7 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

----------NOTES----------

1. Both required RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One required RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 3, with reactor steam dome pressure less than the RHR shutdown cooling isolation pressure.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	~~A.1~~ ~~Initiate action to restore required RHR shutdown cooling subsystem(s) to OPERABLE status.~~ ~~AND~~	~~Immediately~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ Verify an alternate method of decay heat removal is available for each required inoperable RHR shutdown cooling subsystem.	1 hour
	AND	
	~~A.3~~ ~~Be in MODE 4.~~	~~24 hours~~
~~B.~~ No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	~~B.1~~ Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	AND	
	~~B.2~~ Verify reactor coolant circulation by an alternate method.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND	
	~~B.3~~ Monitor reactor coolant temperature and pressure.	Once per hour

A.1

AND
Once per 24 hours thereafter

Immediately

C.

C.1

C.2

C.3

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown

LCO 3.4.8 Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation.

----------NOTES----------
1. Both required RHR shutdown cooling subsystems and recirculation pumps may be removed from operation for up to 2 hours per 8 hour period.

2. One required RHR shutdown cooling subsystem may be inoperable for up to 2 hours for performance of Surveillances.

APPLICABILITY: MODE 4.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required RHR shutdown cooling subsystems inoperable.	A.1 Verify an alternate method of decay heat removal is available for each inoperable required RHR shutdown cooling subsystem.	1 hour AND Once per 24 hours thereafter

(continued)

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ No RHR shutdown cooling subsystem in operation. C. AND No recirculation pump in operation.	~~B.1~~ Verify reactor coolant circulating by an alternate method. C.1	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter
	AND ~~B.2~~ Monitor reactor coolant temperature and pressure. C.2	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one required RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program.
SR 3.4.8.2	----------NOTE---------- HPSW system related components are excluded. ---------- Verify required RHR shutdown cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program.

ATTACHMENT 2
Markup of Proposed Technical Specifications Pages

2.7 Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30

REVISED TECHNICAL SPECIFICATIONS PAGES

3.4.7-1
3.4.7-2
3.4.8-2

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown

LCO 3.4.7 Two RHR shutdown cooling subsystems shall be OPERABLE.

---NOTE---
One RHR shutdown cooling subsystem may be inoperable for up to 2 hours for the performance of Surveillances.

APPLICABILITY: MODE 3, with reactor steam dome pressure less than the RHR cut-in permissive pressure.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each RHR shutdown cooling subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two RHR shutdown cooling subsystems inoperable.	~~A.1~~ ~~Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.~~ ~~AND~~	~~Immediately~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2~~ Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem.	1 hour
	AND	
	~~A.3~~ --------NOTE-------- Only applicable if both RHR shutdown cooling subsystems are inoperable. ---------- Verify reactor coolant circulation by an alternate method.	1 hour AND Once per 12 hours thereafter
	AND	
	~~A.4~~ --------NOTE-------- Only applicable if both RHR shutdown cooling subsystems are inoperable. ---------- Monitor reactor coolant temperature and pressure.	Once per hour
	~~AND~~	
	~~A.5 Be in MODE 4.~~	~~24 hours~~

A.1

AND
Once per 24 hours thereafter

A.2

A.3

B. Required Action and associated Completion Time of Condition A not met.

B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.

Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 ---------NOTE-------- Only applicable if both RHR shutdown cooling subsystems are inoperable. ---------- Verify reactor coolant circulating by an alternate method.	1 hour AND Once per 12 hours thereafter
	AND A.3 ---------NOTE-------- Only applicable if both RHR shutdown cooling subsystems are inoperable. ---------- Monitor reactor coolant temperature and pressure.	Once per hour
B. Required Action and associated Completion Time of Condition A not met.	*B.1 Initiate action to restore RHR shutdown cooling subsystem(s) to OPERABLE status.*	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify each RHR shutdown cooling subsystem manual and power operated valve in the flow path, that is not locked, sealed or otherwise secured in position, is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.1 Clinton Power Station, Unit 1
Facility Operating License No. NPF-62

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4-45
B 3.4-46
B 3.4-47
B 3.4-51
B 3.9-27
B 3.9-31

BASES

APPLICABILITY (continued)

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.10, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.8, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.9, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1, A.2, and A.3

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal. The overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore an alternate method of decay heat removal must be provided.

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

Furthermore, verification of the functional availability of these alternate methods must be confirmed every 24 hours thereafter. This will provide assurance of continued heat removal capacity.

sufficient

The required cooling capacity of the alternate method should be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature at or below 200°F. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System

, or an inoperable but functional RHR shutdown cooling subsystem.

However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.

B.1

If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1, B.2, and B.3

C.1, C.2, and C.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or one recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

(continued)

BASES

C.1, C.2, and C.3

ACTIONS

B.1, B.2, and B.3 (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.9.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove

(continued)

BASES

ACTIONS

A.1 (continued)

reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

The required cooling capacity of the alternate method should be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature at or below 200°F. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

B.1 and B.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Note 1, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR Shutdown Cooling System or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient

(continued)

sufficient

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

C.1 and C.2

BASES

ACTIONS

A.1 (continued)

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed, or the Spent Fuel Pool Cooling System. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System, the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

B.1, B.2, B.3, B.4, and B.5

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending the loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability (i.e., at least one isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each secondary containment and secondary containment bypass penetration flow path not isolated that is assumed to be isolated to mitigate radioactivity releases. This may be performed as an administrative check, by examining logs or other information, to determine if the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the Surveillances may need to be performed to restore the component to OPERABLE status. In addition, at least one door in the upper containment personnel air lock must be closed. The closed air lock door completes the boundary for control of potential radioactive releases. With the appropriate administrative controls however, the closed door can be opened intermittently for entry and exit. This allowance is acceptable due to the need for containment access and due to the slow progression of events which may result from inadequate decay heat removal. Loss of decay heat removal

(continued)

BASES

ACTIONS A.1 (continued)

decay heat removal must be provided. With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed. The method used to remove decay heat should be the most prudent choice based on unit conditions.

B.1, B.2, B.3, and B.4

With the required RHR shutdown cooling subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability (i.e., at least one isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each secondary containment and secondary containment bypass penetration flow path not isolated that is assumed to be isolated to mitigate radioactivity releases. This may be performed as an administrative check, by examining logs or other information, to determine if the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.2 Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.7-3
B 3.4.7-4
B 3.4.7-5
B 3.4.8-4
B 3.9.8-3
B 3.9.9-3

BASES

APPLICABILITY (continued)

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.8, "Shutdown Cooling (SDC) System—Cold Shutdown"; LCO 3.9.8, "Shutdown Cooling (SDC)—High Water Level"; and LCO 3.9.9, "Shutdown Cooling (SDC)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to SDC subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable SDC subsystem.

A.1~~, A.2, and A.3~~

With one required SDC subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal.~~ ~~The~~ overall reliability is reduced~~, however,~~ because a single failure in the OPERABLE subsystem could result in reduced SDC capability. Therefore, an alternate method of decay heat removal must be provided.

(continued)

BASES

ACTIONS A.1~~, A.2, and A.3~~ (continued)

With both required SDC subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial SDC subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal ~~capabilities~~.

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, ~~and~~ the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System).

, or an inoperable but functional SDC subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable SDC subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1, B.2, and B.3~~ C.1, C.2, and C.3

With no required SDC subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, reactor coolant circulation by the SDC subsystem or recirculation pump must be restored without delay.

Until SDC or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

(continued)

BASES

C.1, C.2, and C.3

ACTIONS

~~B.1, B.2, and B.3~~ (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required SDC subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This Surveillance verifies that one SDC subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This Surveillance is modified by a Note allowing sufficient time to align the SDC System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.7.2

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the SDC subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system

(continued)

BASES

ACTIONS A.1 (continued)

functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam System, ~~and~~ the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System)~~.~~ , or an inoperable but functional SDC subsystem.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable SDC subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1 and B.2~~ C.1 and C.2

With no required SDC subsystem and no recirculation pump in operation, except as permitted by LCO Notes 1 and 2, and until SDC or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required SDC System or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

(continued)

BASES

sufficient

ACTIONS

A.1 (continued)

verification of the functional availability of the alternate method must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. ~~For example, this may include the use of the Fuel Pool Cooling or Reactor Water Cleanup System operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System or Condensate/Feed System. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System, the Reactor Water Cleanup System

or an inoperable but functional SDC subsystem.

B.1, B.2, B.3, and B.4

If no shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated). This may be performed as an administrative check, by

(continued)

BASES

ACTIONS

A.1 (continued)

sufficient

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. ~~For example, this may include the use of the Fuel Pool Cooling or Reactor Water Cleanup System operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System or Condensate/Feed System. The method used to remove decay heat should be the most prudent choice based on unit conditions.

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System, the Reactor Water Cleanup System

, or an inoperable but functional SDC subsystem.

Condition A is modified by a Note allowing separate Condition entry for each inoperable SDC subsystem. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each inoperable SDC subsystem. Complying with the Required Actions allow for continued operation. A subsequent inoperable subsystem is governed by subsequent entry into the Condition and application of the Required Actions

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.3 James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-59

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.7-3
B 3.4.7-4
B 3.4.8-3
B 3.4.8-4
B 3.9.7-2
B 3.9.8-2
B 3.9.8-3

BASES

APPLICABILITY (continued)

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1, ~~A.2, and A.3~~

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by the LCO Note, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal. The~~ overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided.

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown

(continued)

BASES

ACTIONS

A.1, ~~A.2, and A.3~~ (continued)

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate and Main Steam Systems, Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate System), ~~or~~ a combination of an RHR pump and safety/relief valve(s), or an inoperable but functional RHR shutdown cooling subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

Verifying the correct alignment for manual, power operated, and automatic valves in the RHR shutdown cooling flow path provides assurance that the proper flow paths will exist for RHR operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that can be manually (from the control room or locally) aligned is allowed to be in a non-RHR shutdown cooling position provided the valve can be repositioned. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

APPLICABILITY (continued)

System – Hot Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR) – High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR) – Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1

With one of the two required RHR shutdown cooling subsystems inoperable, except as permitted by the LCO Note, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore, an alternate method of decay heat removal must be provided. With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

(continued)

BASES

ACTIONS

A.1 (continued)

the Condensate and Main Steam Systems, Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate System), ~~or~~ a combination of an RHR pump and safety/relief valve(s).

, or an inoperable but functional RHR shutdown cooling subsystem.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the RHR shutdown cooling flow path provides assurance that the proper flow paths will exist for RHR operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that can be manually (from the control room or locally) aligned is allowed to be in a non-RHR shutdown cooling position provided the valve can be repositioned. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Chapter 14.
2. 10 CFR 50.36(c)(2)(ii).

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

BASES

LCO (continued)

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (from the control room or locally) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required.

APPLICABILITY

One RHR shutdown cooling subsystem must be OPERABLE in MODE 5, with irradiated fuel in the reactor pressure vessel and with the water level ≥ 22 ft 2 inches above the top of the RPV flange, to provide decay heat removal. RHR shutdown cooling subsystem requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS). RHR shutdown cooling subsystem requirements in MODE 5 with irradiated fuel in the reactor pressure vessel and with the water level < 22 ft 2 inches above the top of the RPV flange are given in LCO 3.9.8, "Residual Heat Removal (RHR) – Low Water Level".

ACTIONS

A.1

With no RHR shutdown cooling subsystem OPERABLE, an alternate method of decay heat removal must be established within 1 hour. In this condition, the volume of water above the top of the RPV flange provides adequate capability to remove decay heat from the reactor core. However, the overall reliability is reduced because loss of water level could result in reduced decay heat removal capability. The 1 hour Completion Time is based on decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of the alternate method must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the plant Operating Procedures. The required cooling capacity of the alternate method should be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature. For example, this may include the use of the Spent Fuel Pool Cooling System, and the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed or in combination with the Control Rod Drive System or Condensate System. In addition, the Decay Heat Removal

sufficient

Alternate methods that can be used include (but are not limited to)

, or an inoperable but functional RHR shutdown cooling subsystem

(continued)

BASES

LCO (continued)

removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required.

APPLICABILITY

Two RHR shutdown cooling subsystems are required to be OPERABLE in MODE 5, with irradiated fuel in the RPV and with the water level < 22 ft 2 inches above the top of the RPV flange, to provide decay heat removal. RHR shutdown cooling subsystem requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS). RHR shutdown cooling subsystem requirements in MODE 5 with irradiated fuel in the RPV and with the water level ≥ 22 ft 2 inches above the top of the RPV flange are given in LCO 3.9.7, "Residual Heat Removal (RHR) – High Water Level."

ACTIONS

A.1

With one of the two required RHR shutdown cooling subsystems inoperable, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore, an alternate method of decay heat removal must be provided. With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of this alternate method must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

sufficient

Alternate methods that can be used include (but are not limited to)

Alternate decay heat removal methods are available to the operators for review and preplanning in the plant Operating Procedures. The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capacity~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Spent Fuel Pool Cooling System ~~and~~ the Reactor Water Cleanup System ~~operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System

(continued)

, or an inoperable but functional RHR shutdown cooling subsystem.

BASES

ACTIONS

A.1 (continued)

or Condensate System. The method used to remove decay heat should be the most prudent choice based on plant conditions. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability.

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or acceptable administrative controls assure isolation capability. These administrative controls consist of stationing an operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment is indicated). This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the RHR shutdown cooling flow paths provides assurance that the proper flow paths will exist for RHR operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.4 LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.9-3
B 3.4.9-4
B 3.4.9-5
B 3.4.10-4
B 3.4.10-5
B 3.9.8-3
B 3.9.9-3

BASES

APPLICABILITY (continued)

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.10, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.8, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.9, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1~~, A.2, and A.3~~

With one RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal.~~ ~~The~~ overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore an alternate method of decay heat removal must be provided.

(continued)

BASES

ACTIONS

A.1~~, A.2, and A.3~~ (continued)

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements ~~of the LCO~~. The 1 hour Completion Time is based on the decay heat removal ~~function~~ and the probability of a loss of the available decay heat removal capabilities.

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems~~, or~~ the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System)~~, and~~ a combination of an ECCS pump and S/RVs, or an inoperable but functional RHR shutdown cooling subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

~~B.1, B.2, and B.3~~ C.1, C.2, and C.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or one recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable

(continued)

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

BASES

C.1, C.2, and C.3

ACTIONS

~~B.1, B.2, and B.3~~ (continued)

separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.9.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump

(continued)

BASES

ACTIONS

A.1 (continued)

removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System) ~~and~~ a combination of an ECCS pump and S/RVs~~.~~ , or an inoperable but functional RHR shutdown cooling subsystem.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1 and B.2~~ C.1 and C.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Notes 1 and 2, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

(continued)

BASES

C.1 and C.2

ACTIONS ~~B.1 and B.2~~ (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.10.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

(continued)

BASES

, or an inoperable but functional RHR shutdown cooling subsystem.

ACTIONS A.1 (continued)

functional availability of the alternate method must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Fuel Pool Cooling System (operating with positive flow from the reactor cavity to the skimmer surge tank), the Reactor Water Cleanup System, ~~or~~ the Control Rod Drive System~~.~~ The method used to remove the decay heat should be the most prudent choice based on unit conditions.

sufficient

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending the loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated).

(continued)

BASES

ACTIONS

A.1 (continued)

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method(s) should be ~~ensured by verifying (by calculation or demonstration) their capability~~ sufficient to maintain or reduce temperature. ~~For example, this may include the use of~~ the Fuel Pool Cooling System (operating with positive flow from the reactor cavity to the skimmer surge tank), the Reactor Water Cleanup System, ~~or~~ the Control Rod Drive System~~.~~ The method used to remove decay heat should be the most prudent choice based on unit conditions.

Condition A is modified by a Note allowing separate Condition entry for each inoperable RHR shutdown cooling subsystem. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each inoperable RHR shutdown cooling subsystem. Complying with the Required Actions allow for continued operation. A subsequent inoperable RHR shutdown cooling subsystem is governed by subsequent entry into the Condition and application of the Required Actions.

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device.

(continued)

, or an inoperable but functional RHR shutdown cooling subsystem.

sufficient

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.5 Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.9-3
B 3.4.9-4
B 3.4.10-3
B 3.4.10-4
B 3.9.8-3
B 3.9.9-3

BASES (continued)

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1~~, A.2, and A.3~~

With one RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal. The~~ overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore an alternate method of decay heat removal must be provided.

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

(continued)

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

BASES

ACTIONS

~~A.1, A.2, and A.3~~ (continued)

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System), ~~and~~ a combination of an ECCS pump and S/RVs~~.~~

sufficient

or an inoperable but functional RHR shutdown cooling subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

~~B.1, B.2, and B.3~~

C.1, C.2, and C.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or one recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

(continued)

BASES (continued)

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provided appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1

With one of the two RHR shutdown cooling subsystems inoperable except as permitted by LCO Note 2, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore, an alternate method of decay heat removal must be provided. With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, the Reactor Water Cleanup System (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/ Feed System), ~~and~~ a combination of an ECCS pump and S/RVs~~.~~

, or an inoperable but functional RHR shutdown cooling subsystem.

(continued)

BASES

ACTIONS (continued)

~~B.1 and B.2~~ C.1 and C.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as is permitted by LCO Note 1, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling system or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.4.10.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

(continued)

sufficient

BASES

ACTIONS

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

A.1 (continued)

method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Spent Fuel Pool Cooling and Cleanup System, Alternate Decay Heat Removal System, ~~or~~ the Reactor Water Cleanup System ~~operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System or Condensate/Feed System. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

, or an inoperable but functional RHR shutdown cooling subsystem.

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending the loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE, one standby gas treatment subsystem is OPERABLE, and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated). This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it

(continued)

BASES

sufficient

ACTIONS

A.1 (continued)

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method(s) should be ~~ensured by verifying (by calculation or demonstration) their capability~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Spent Fuel Pool Cooling and Cleanup System, Alternate Decay Heat Removal System, or the Reactor Water Cleanup System ~~operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System or Condensate/Feed System. The method used to remove decay heat should be the most prudent choice based on unit conditions.

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

, or an inoperable but functional RHR shutdown cooling subsystem.

Condition A is modified by a Note allowing separate Condition entry for each inoperable RHR shutdown cooling subsystem. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each inoperable RHR shutdown cooling subsystem. Complying with the Required Actions allow for continued operation. A subsequent inoperable RHR shutdown cooling subsystem is governed by subsequent entry into the Condition and application of the Required Actions.

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE, one standby gas treatment subsystem is OPERABLE, and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. These administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room, at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.6 Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

Peach Bottom Atomic Power Station, Unit 2

B 3.4-35
B 3.4-36
B 3.4-37
B 3.4-41
B 3.9-22
B 3.9-26

Peach Bottom Atomic Power Station, Unit 3

B 3.4-35
B 3.4-36
B 3.4-37
B 3.4-41
B 3.9-22
B 3.9-26

BASES

APPLICABILITY (continued)

Additionally, in MODE 2 below this pressure, the OPERABILITY requirements for the Emergency Core Cooling Systems (ECCS) (LCO 3.5.1, "ECCS—Operating") do not allow placing the RHR shutdown cooling subsystem into operation.

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1~~, A.2, and A.3~~

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal.~~ ~~The~~

(continued)

BASES

ACTIONS A.1~~, A.2, and A.3~~ (continued)

overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided.

With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Main Steam Systems ~~and~~ the Reactor Water Cleanup System.

or an inoperable but functional RHR shutdown cooling subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1, B.2, and B.3~~ C.1, C.2, and C.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant

(continued)

BASES

C.1, C.2, and C.3

ACTIONS ~~B.1, B.2, and B.3~~ (continued)

circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This Surveillance verifies that one required RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure setpoint that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.7.2

RHR Shutdown Cooling (SDC) System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

(continued)

BASES

ACTIONS

A.1 (continued)

removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Main Steam Systems (feed and bleed), ~~and~~ the Reactor Water Cleanup System.

, or an inoperable but functional RHR shutdown cooling subsystem.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1 and B.2~~ C.1 and C.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

(continued)

BASES

ACTIONS

A.1 (continued)

the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. ~~For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed.~~ The method used to remove the decay heat should be the most prudent choice based on unit conditions.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System, the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem for Unit 2 is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each associated penetration not isolated that is assumed to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

(continued)

BASES

ACTIONS

A.1 (continued)

LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of this alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. ~~For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed.~~ The method used to remove decay heat should be the most prudent choice based on unit conditions.

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem for Unit 2 is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each associated penetration that is assumed to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

(continued)

BASES

APPLICABILITY (continued)

Additionally, in MODE 2 below this pressure, the OPERABILITY requirements for the Emergency Core Cooling Systems (ECCS) (LCO 3.5.1, "ECCS—Operating") do not allow placing the RHR shutdown cooling subsystem into operation.

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.7, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.8, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1~~, A.2, and A.3~~

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by LCO Note 2, the ~~inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal.~~ ~~The~~

(continued)

BASES

ACTIONS A.1~~, A.2, and A.3~~ (continued)

overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided.

With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Main Steam Systems, ~~and~~ the Reactor Water Cleanup System.

, or an inoperable but functional RHR shutdown cooling subsystem.

~~However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.~~

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1~~, B.2, and B.3~~

C.1, C.2, and C.3

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, reactor coolant circulation by the RHR shutdown cooling subsystem or recirculation pump must be restored without delay.

Until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant

(continued)

BASES

C.1, C.2, and C.3

ACTIONS

~~B.1, B.2, and B.3~~ (continued)

circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This Surveillance verifies that one required RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure setpoint that isolates the system, or for placing a recirculation pump in operation. The Note takes exception to the requirements of the Surveillance being met (i.e., forced coolant circulation is not required for this initial 2 hour period), which also allows entry into the Applicability of this Specification in accordance with SR 3.0.4 since the Surveillance will not be "not met" at the time of entry into the Applicability.

SR 3.4.7.2

RHR Shutdown Cooling (SDC) System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

(continued)

BASES

ACTIONS A.1 (continued)

removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Main Steam Systems (feed and bleed), ~~and~~ the Reactor Water Cleanup System~~.~~

, or an inoperable but functional RHR shutdown cooling subsystem.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

~~B.1 and B.2~~ C.1 and C.2

With no RHR shutdown cooling subsystem and no recirculation pump in operation, except as permitted by LCO Note 1, and until RHR or recirculation pump operation is re-established, an alternate method of reactor coolant circulation must be placed into service. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the coolant circulation function and is modified such that the 1 hour is applicable separately for each occurrence involving a loss of coolant circulation. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

(continued)

BASES

ACTIONS

A.1 (continued)

the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Spent Fuel Pool Cooling System, the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. ~~For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed.~~ The method used to remove the decay heat should be the most prudent choice based on unit conditions.

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem for Unit 3 is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each associated penetration not isolated that is assumed to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, a surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

(continued)

BASES

ACTIONS

A.1 (continued)

LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of this alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

The required cooling capacity of the alternate method should be sufficient to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Reactor Water Cleanup System, or an inoperable but functional RHR shutdown cooling subsystem.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit's Operating Procedures. ~~For example, this may include the use of the Reactor Water Cleanup System, operating with the regenerative heat exchanger bypassed.~~ The method used to remove decay heat should be the most prudent choice based on unit conditions.

B.1, B.2, and B.3

With the required decay heat removal subsystem(s) inoperable and the required alternate method(s) of decay heat removal not available in accordance with Required Action A.1, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem for Unit 3 is OPERABLE; and secondary containment isolation capability (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability) in each associated penetration that is assumed to be isolated to mitigate radioactive releases. This may be performed as an administrative check, by examining logs or other information to determine whether the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate the OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the surveillance may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.

(continued)

ATTACHMENT 3
Markup of Proposed Technical Specifications Bases Pages
(Information Only)

3.7 Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30

REVISED TECHNICAL SPECIFICATIONS BASES PAGES

B 3.4.7-3
B 3.4.7-4
B 3.4.8-4
B 3.4.8-5
B 3.9.8-2
B 3.9.8-3
B 3.9.9-2
B 3.9.9-3

BASES

APPLICABILITY (continued)

The requirements for decay heat removal in MODES 4 and 5 are discussed in LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Cold Shutdown"; LCO 3.9.8, "Residual Heat Removal (RHR)—High Water Level"; and LCO 3.9.9, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS A Note has been provided to modify the ACTIONS related to RHR shutdown cooling subsystems. Section 1.3, Completion Times, specifies once a Condition has been entered, subsequent divisions, subsystems, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable shutdown cooling subsystems provide appropriate compensatory measures for separate inoperable shutdown cooling subsystems. As such, a Note has been provided that allows separate Condition entry for each inoperable RHR shutdown cooling subsystem.

A.1, A.2, and A.3

~~A.1, A.2, A.3, A.4, and A.5~~

With one RHR shutdown cooling subsystem inoperable for decay heat removal, except as permitted by the LCO Note, the ~~inoperable subsystem must be restored to OPERABLE status without delay (Required Action A.1). In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal.~~ ~~The~~ overall reliability is reduced~~, however,~~ because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided (Required Action ~~A.2~~).

A.1

Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

With both RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

(continued)

A.1, A.2, and A.3

, or an inoperable but functional RHR shutdown cooling subsystem.

BASES

ACTIONS ~~A.1, A.2, A.3, A.4 and A.5~~ (continued)

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, the Reactor Water Cleanup System in the decay heat removal mode (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System), ~~and~~ a combination of an ECCS pump and relief valve(s). In addition, with both RHR shutdown cooling subsystems inoperable, an alternate method of reactor coolant circulation must be placed into service (Required Action ~~A.3~~). This alternate method may be satisfied by placing a recirculation pump in operation. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the importance of the coolant circulation function. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

A.2

During the period when the reactor coolant is being circulated by an alternate method (other than by an RHR shutdown cooling subsystem), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method (Required Action ~~A.4~~). The once per hour Completion Time is deemed appropriate. Required Actions ~~A.3~~ and ~~A.4~~ are modified by Notes that clarify that these Required Actions are only applicable when both RHR shutdown cooling subsystems are inoperable since Condition A is applicable when one or two RHR shutdown cooling subsystems are inoperable.

A.3

A.2

A.3

~~Due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered (Required Action A.5).~~

(continued)

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

BASES

ACTIONS

A.1 (continued)

and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of these alternate method(s) must be reconfirmed every 24 hours thereafter. This will provide assurance of continued heat removal capability.

sufficient

The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or demonstration) its capability~~ to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Feed and Main Steam Systems, the Reactor Water Cleanup System in the decay heat removal mode (by itself or using feed and bleed in combination with the Control Rod Drive System or Condensate/Feed System), ~~and~~ a combination of an ECCS pump and a safety/relief valve~~.~~ *or an inoperable but functional RHR shutdown cooling subsystem.*

A.2 and A.3

With both RHR shutdown cooling subsystems inoperable, an alternate method of reactor coolant circulation must be placed into service. This alternate method may be satisfied by placing a recirculation pump in operation. This will provide the necessary circulation for monitoring coolant temperature. The 1 hour Completion Time is based on the importance of the coolant circulation function. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by one of the required RHR shutdown cooling subsystems), the reactor coolant temperature and pressure must be periodically monitored to ensure proper function of the alternate method. The once per hour Completion Time is deemed appropriate.

(continued)

BASES

ACTIONS

A.2 and A.3 (continued)

Required Actions A.2 and A.3 are modified by Notes that clarify that these Required Actions are only applicable when both RHR shutdown cooling subsystems are inoperable since Condition A is applicable when one or two RHR shutdown cooling subsystems are inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

Verifying the correct alignment for manual and power operated valves in the two RHR shutdown cooling subsystems' flow paths provides assurance that the proper flow paths will exist for RHR operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that can be manually (remote or local) aligned is allowed to be in a non-RHR shutdown cooling position provided the valve can be repositioned. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

B.1
If the required alternate method(s) of decay heat removal cannot be verified within one hour, immediate action must be taken to restore the inoperable RHR shutdown cooling subsystem(s) to operable status. The Required Action will restore redundant decay heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

SR 3.4.8.2

RHR Shutdown Cooling System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR shutdown cooling subsystems and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of RHR Shutdown Cooling System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of

(continued)

BASES

LCO (continued)

necessary portions of the RHR Service Water System must be capable of providing cooling water to the RHR heat exchanger. Management of gas voids is important to RHR Shutdown Cooling System OPERABILITY.

Additionally, the RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required.

APPLICABILITY

One RHR shutdown cooling subsystem must be OPERABLE in MODE 5, with irradiated fuel in the RPV and with the water level ≥ 23 feet above the top of the RPV flange, to provide decay heat removal. RHR shutdown cooling subsystem requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS). RHR shutdown cooling subsystem requirements in MODE 5 with irradiated fuel in the RPV and with the water level < 23 ft above the RPV flange are given in LCO 3.9.9, "Residual Heat Removal (RHR)—Low Water Level."

ACTIONS

A.1, A.2, and A.3

With no RHR shutdown cooling subsystem OPERABLE, an alternate method of decay heat removal must be provided within 1 hour. In this condition, the volume of water above the RPV flange provides adequate capability to remove decay heat from the reactor core. However, the overall reliability is reduced because loss of water level could result in reduced decay heat removal capability. The 1 hour Completion Time is based on decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of the alternate method must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method should be ~~ensured by verifying (by calculation or~~ sufficient

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

~~demonstration) its capability~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Fuel Pool Cooling, ~~or~~ Reactor Water Cleanup System ~~operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System or Condensate/Feed System. The method used to remove the decay heat should be the most prudent choice based on unit conditions.

, or an inoperable but functional RHR shutdown cooling subsystem

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

Additionally, if no RHR Shutdown Cooling System is OPERABLE, an alternate method of coolant circulation is required to be established within 1 hour. The 1 hour Completion Time is based on the importance of the coolant circulation function. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

B.1, B.2, B.3, and B.4

If no RHR shutdown cooling subsystem is OPERABLE and an alternate method of decay heat removal is not available in accordance with Required Action A.1, actions shall be taken immediately to suspend operations involving an increase in reactor decay heat load by suspending loading of irradiated fuel assemblies into the RPV.

Additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each associated penetration flow path not isolated that is assumed to be isolated to mitigate radioactive releases (i.e., one

(continued)

BASES

LCO (continued)

Additionally, each RHR shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required.

APPLICABILITY

Two RHR shutdown cooling subsystems are required to be OPERABLE in MODE 5, with irradiated fuel in the RPV and with the water level < 23 ft above the top of the RPV flange, to provide decay heat removal. RHR shutdown cooling subsystem requirements in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS). RHR shutdown cooling subsystem requirements in MODE 5 with irradiated fuel in the RPV and with the water level ≥ 23 ft above the RPV flange are given in LCO 3.9.8, "Residual Heat Removal (RHR)—High Water Level."

ACTIONS

A.1, A.2, and A.3

With one of the two required RHR shutdown cooling subsystems inoperable, the remaining subsystem is capable of providing the required decay heat removal. However, the overall reliability is reduced. Therefore, an alternate method of decay heat removal must be provided. With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities. Furthermore, verification of the functional availability of the alternate method(s) must be reconfirmed every 24 hours thereafter. This will ensure continued heat removal capability.

Alternate decay heat removal methods are available to the operators for review and preplanning in the unit operating procedures. The required cooling capacity of the alternate method(s) should be ~~ensured by verifying (by calculation or~~ sufficient

(continued)

, or an inoperable but functional RHR shutdown cooling subsystem

BASES

ACTIONS A.1, A.2, and A.3 (continued)

~~demonstration) their capability~~ to maintain or reduce temperature. ~~For example, this may include the use of~~ the Fuel Pool Cooling, ~~or~~ Reactor Water Cleanup System ~~operating with the regenerative heat exchanger bypassed or~~ in combination with the Control Rod Drive System/Feed System. The method used to remove decay heat should be the most prudent choice based on unit conditions.

Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to)

In addition, with both required RHR subsystems inoperable, an alternate method of coolant circulation is required to be established within 1 hour (Required Action A.2). This will provide necessary circulation for monitoring temperature. The 1 hour Completion Time is based on the importance of the coolant circulation function. Furthermore, verification of the functioning of the alternate method must be reconfirmed every 12 hours thereafter. This will provide assurance of continued temperature monitoring capability.

During the period when the reactor coolant is being circulated by an alternate method (other than by an RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method (Required Action A.3). The once per hour Completion Time is deemed appropriate.

Condition A is modified by a Note allowing separate Condition entry for each inoperable required RHR shutdown cooling subsystem. This is acceptable since the Required Actions for this Condition provide appropriate compensatory actions for each inoperable required RHR shutdown cooling subsystem. Complying with the Required Actions allow for continued operation. A subsequent inoperable required RHR shutdown cooling subsystem is governed by subsequent entry into the Condition and application of the Required Actions. Required Actions A.2 and A.3 are modified by Notes that clarify that the Required Actions are only applicable when both required RHR shutdown cooling subsystems are inoperable since the Condition is applicable when one or two required RHR shutdown cooling subsystems are inoperable.

(continued)