WOLF CREEK
NUCLEAR OPERATING CORPORATION

Richard A. Muench
Vice President Engineering

DEC 15 1999

ET 99-0050

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

Reference: (1) Letter dated March 31, 1999 from J. N. Donohew, USNRC, to O. L. Maynard, WCNOC

Subject: Docket No. 50-482: Proposed Revision to Technical Specification 3.5.5, Seal Injection Flow

Gentlemen:

This letter transmits an application for amendment to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS). This request proposes to revise improved Technical Specifications 3.5.5, Figure 3.5.5-1, "Seal Injection Flow Limits," to provide flow limits that address normal and off-normal plant operating conditions. Reference 1 provided Amendment No. 123 and the associated Safety Evaluation for the conversion of the WCGS current Technical Specifications to the improved Technical Specifications which included the addition of new specification 3.5.5 for WCGS.

During activities associated with the implementation of Amendment No. 123 (Reference 1), editorial errors have been identified that are attributed to errors associated with the conversion application and supplements or the submittal of the certified copy of improved Technical Specifications. This amendment request corrects the editorial errors. These editorial errors do not affect any technical requirements.

A safety evaluation is provided in Attachment I. A No Significant Hazards Consideration Determination is provided in Attachment II. Attachment III is the related Environmental Impact Determination. Marked up Technical Specifications pages are provided in Attachment IV including those pages that are typographical corrections. Attachment V provides proposed changes to the Technical Specification Bases for information. Attachment VI provides a listing of commitments made in this submittal.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Kansas State Official. The proposed changes to the WCGS Technical Specifications will be implemented within 60 days of formal NRC approval.

A001

P.O. Box 411 / Burlington, KS 66839 / Phone: (316) 364-8831

If you have any questions concerning this matter, please contact me at (316) 364-4034, or Mr. Michael J. Angus, at (316) 364-4077.

Very truly yours,

Richard A. Muench

RAM/rlr

Attachments: I - Safety Evaluation
II - No Significant Hazards Consideration Determination
III - Environmental Impact Determination
IV - Proposed Technical Specification Changes
V - Proposed Technical Specification Bases Changes
VI - List of Commitments

cc: V. L. Cooper (KDHE), w/a
J. N. Donohew (NRC), w/a
W. D. Johnson (NRC), w/a
E. W. Merschoff (NRC), w/a
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Richard A. Muench, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the content thereof; that he has executed that same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By RAMuench
Richard A. Muench
Vice President Engineering

SUBSCRIBED and sworn to before me this 15th day of December, 1999.

NOTARY PUBLIC STATE OF KANSAS
RHONDA L. RODGERS
My Appt. Exp. 5-11-2002

Rhonda L. Rodgers
Notary Public

Expiration Date May 11, 2002

ATTACHMENT I

SAFETY EVALUATION

Safety Evaluation

Proposed Changes

This license amendment request proposes to revise improved Technical Specification LCO 3.5.5, Figure 3.5.5-1 to provide flow limits that address normal and off-normal plant operating conditions. Specifically, the figure is being revised to reflect the flow limits at higher differential pressures and abnormally low seal injection flows.

In addition, editorial errors are being corrected that are attributed to errors associated with the conversion application and supplements or submittal of the certified copy of the improved Technical Specifications (ITS).

Background

License Amendment No. 123 and the associated Safety Evaluation was issued on March 31, 1999 for the conversion of the WCGS current Technical Specifications (CTS) to the ITS. With the issuance of this amendment, LCO 3.5.5, Seal Injection Flow, became a new specification for Wolf Creek Generating Station (WCGS). The CTS define CONTROLLED LEAKAGE as seal water flow from the seals (i.e., seal leakoff). Further, the Operational Leakage CTS (LCO 3.4.6.2.e and SR 4.4.6.2.1.c) are based on seal leakoff. Letter WO 98-0105 dated November 24, 1998, reflects the decision to adopt a specification for seal injection which reflects our safety analysis.

The function of the reactor coolant pump (RCP) shaft seal assembly is to provide a pressure breakdown from Reactor Coolant System (RCS) pressure conditions to ambient pressure, and thus maintain reactor coolant leakage along the pump shaft to a minimum. During normal operation, high pressure seal injection flow from the Chemical and Volume Control System (CVCS) enters the pump through a connection on the thermal barrier flange at a rate of approximately 8 gpm per pump. About 5 gpm of this injection water flows downward through the main radial bearing and the thermal barrier heat exchanger into the primary system. The remaining 3 gpm flows up the shaft and enters the No. 1 seal. The No. 1 seal is a hydro-statically balanced, film-riding face seal that has approximately 2200 psi of pressure drop across it. The No. 1 seal is referred to as a controlled leakage seal because the leakage through the seal is predetermined by ensuring that the gap between the seal ring and the seal runner is held to a constant value via a stable balance of hydrostatic forces on the seal ring. Most of the water leaving the No. 1 seal flows into the CVCS seal water return line. Backpressure from the Volume Control Tank and No. 1 seal return throttle valve (BGV0202) forces water across the No. 2 seal face. The No. 3 seal is also a rubbing-face seal, located above the No. 2 seal. The No. 3 seal backpressure, provided by the RCP seal standpipe, forces approximately 3 gph leakoff from the No. 2 seal into the reactor coolant drain tank via the No. 2 seal leakoff connection. No. 3 seal leakoff (approximately 400 cc/hr) is sent to the normal containment sump. Measurement of the No. 1 seal leakoff provides a gauge for RCP seal performance.

The seal injection throttle valves, BGV0198 through BGV0201, are normally set on a refueling outage interval, if required, to ensure proper flow resistance and pressure drop in the piping to each seal injection point in the event of a LOCA. Once set, these throttle valves are secured with locking devices and mechanical position stops. These devices help to ensure that the following safety analyses assumptions remain valid: (1) both the maximum and minimum total system resistance; (2) both the maximum and minimum branch injection line resistance; and (3) the maximum and minimum ranges of potential pump performance. These resistances and pump performance ranges are used to

The restriction on RCP seal injection flow limits the amount of ECCS flow that would be diverted from the injection path following an accident. This limit is based on safety analysis assumptions that are required because RCP seal injection flow is not isolated during Safety Injection. The intent of LCO 3.5.5 is to limit seal injection flow through the RCP seal water injection line to ensure sufficient centrifugal charging pump injection flow is directed to the RCS via the injection points.

Evaluation

Technical Specification Surveillance Requirement (SR) 3.0.1 requires that SRs be met during the MODES for individual Limiting Condition for Operations (LCOs), unless otherwise stated in the SR. The Bases state:

> "Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components are OPERABLE when:
>
> a. The systems or components are known to be inoperable, although still meeting the SRs: or
>
> b. The requirements of the Surveillance(s) are known not to be met between required Surveillance performances."

The potential exists that during plant operation, a transient or equipment failure could occur that would result in the seal injection flow being outside the Acceptable Region of the currently approved Figure 3.5.5-1. This transient or equipment failure could be unrelated to the position of the seal injection throttle valves such that adjustment of the valves would not result in being in the Acceptable Range of Figure 3.5.5-1. However, LCO 3.5.5 would still have to be considered not met and adjusting the injection throttle valves per Required Action A.1 may not restore injection flow within the 4 hour Completion Time. If adjustment of the throttle valves did not restore injection flow to within limits, a plant shutdown would be required per Required Action B.1.

The proposed change to Figure 3.5.5-1 extends the bounds of the figure to encompass the entire range of acceptable seal injection flow, while still providing the minimum ECCS flow assumed in the safety analysis. The proposed change to Figure 3.5.5-1 considers abnormally low seal injection flows. The normal operating range of injection flow is 8 to 13 gpm per RCP. In the event that seal injection flow is less than 6 gpm per pump, procedure OFN BB-005, "RCP Malfunction," provides the necessary actions for restoration of injection flow. This low flow rate is not significant to safety because the RCP thermal barriers provide sufficient cooling to the pump water bearing and shaft seal package when seal injection is lost. The upper portion of Figure 3.5.5-1 is also expanded to depict the flow limit at higher differential pressure which potentially could be observed at low reactor pressure in the presence of equipment malfunctions or LOCAs. The upper flow limit envelopes the maximum expected differential pressure during a large break LOCA. The upper flow limit of 18 gpm per RCP provides a conservative limit of 72 gpm total seal injection flow. This is conservative since the flow balance performed to simulate the LOCA condition with single train operation allows up to 80 gpm. The upper limits of allowable seal injection flow were not changed. The range of flow and differential pressure is expanded to encompass varying operational characteristics.

Seal injection flow to the RCP seals is maintained during the injection phase of an SI following the occurrence of a design basis accident. The ECCS analyses provide no core cooling credit for that portion of the safety injection flow that enters the RCP through the seal injection flow path under

Seal injection flow to the RCP seals is maintained during the injection phase of an SI following the occurrence of a design basis accident. The ECCS analyses provide no core cooling credit for that portion of the safety injection flow that enters the RCP through the seal injection flow path under minimum safeguards conditions. The limitation on seal injection flow ensures that in the event of an accident, the safety injection flow will be controlled to be within the constraints assumed in the accident analyses.

All ECCS subsystems are taken credit for in the large break LOCA at full power. The LOCA analysis establishes the minimum flow for the ECCS pumps. The centrifugal charging pumps are also credited in the small break LOCA analysis. This analysis establishes the flow and discharge head at the design point for the centrifugal charging pumps. The steam generator tube rupture and main steam line break event analyses also credit the centrifugal charging pumps, but are not limiting in their design. Reference to these analyses is made in assessing changes to the Seal Injection System for evaluation of their effects in relation to the acceptance limits in these analyses.

The proposed change to Figure 3.5.5-1 are within the bounds of the analyses. With the seal injection flow within the Acceptable Range of the revised figure, the LCO will still ensure that seal injection flow will be sufficient for RCP seal integrity but limited so that the ECCS trains will be capable of delivering sufficient water to match boiloff rates soon enough to minimize uncovering of the core following a large LOCA. The LCO also ensures that the centrifugal charging pumps alone deliver sufficient flow for a small LOCA and sufficient boron to maintain the core subcritical. For smaller LOCAs, the charging pumps alone deliver sufficient flow to overcome the loss and maintain RCS inventory.

Administrative Changes to Correct Editorial Errors

During activities associated with the implementation of Amendment No. 123 (Reference 1), typographical and format errors have been identified that are attributed to errors associated with the submittal of the certified copy of ITS. These typographical and format errors do not affect any technical requirements. The below list are changes based on typographical and format errors in the conversion application and supplements or the certified copy of the ITS that was submitted by letter WO 99-0029 dated March 26, 1999.

1. Page 3.3-15. The Allowable Value for Function 4, delete one of the percent (%) signs.

2. Page 3.3-18. Delete the extra spacing in the description of the Function.

3. Page 3.3-27. Insert periods at the end of the text in Conditions M and N.

4. Page 3.3-34. In Function 5.c, "equirements" should be "requirements."

5. Page 3.3-36. Surveillance Requirement SR 3.3.2.6 is deleted for Function 7.a., Automatic Switchover to Containment Sump - Automatic Actuation Logic and Actuation Relays. SR 3.3.2.6 is a quarterly SLAVE RELAY TEST. In the conversion application (letter ET 97-0050 dated May 15, 1997), SR 3.3.2.6 was applicable to Function 7.a. with footnote (o) that indicated an exception for relays K602, K622, K624, K630, K740, and K741 which shall be tested once per 18 months; and prior to entering MODE 4 whenever the unit has been in MODE 5 or 6 > 24 hours, if not performed within the previous 90 days. In a meeting with the NRC staff on September 15, 1999, NRC RAI Q 3.3-19 was discussed and the resolution

for this item was to develop separate surveillance requirements for the 18 month SLAVE RELAY TEST for the above slave relays. In the response to NRC RAI Q 3.3-19 (letter ET 98-0098 dated December 2, 1998), the markup of the ITS should have shown the listing of SR 3.3.2.6 for Function 7.a. as being deleted. The only slave relays associated with Function 7.a. are K740 and K741 which are surveillance tested on a 18 month Frequency. Therefore deleting SR 3.3.2.6 and adding SR 3.3.2.13 is consistent with the original conversion application and with the CTS.

6. Page 3.3-36. The wording "Coincident with Safety Injection" should be aligned with Function 7.b.

7. Page 3.3-54. Function 3 columns are not aligned with the first line of the text in the Function.

8. Page 3.7-2. The Completion Time in Condition B should be aligned with the Required Action instead of the Note.

9. Pages iii, 3.7-28 to 3.7-31. The heading for this Section should be "EES". NUMARC 93-03, "Writer's Guide for Restructured Technical Specifications" Section 2.1 indicates that the header top line contains the title and the use of acronyms is acceptable. In the other Sections, the header uses acronyms and changing this header provides for consistency within the specifications. The Table of Contents is revised to reflect the correct heading.

10. Page 3.8-23. The word "Associated" in Condition B should be "associated."

The proposed changes involve corrections to the improved Technical Specifications that are associated with the original conversion application and supplements or the certified copy of the improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements of the Technical Specifications.

ATTACHMENT II

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

No Significant Hazards Consideration Determination

Proposed Changes

This license amendment request proposes to revise improved Technical Specification LCO 3.5.5, Figure 3.5.5-1 to provide flow limits that address normal and off-normal plant operating conditions. Specifically, the figure is being revised to reflect the flow limits at higher differential pressures and abnormally low seal injection flows.

In addition, editorial errors are being corrected that are attributed to errors associated with the conversion application and supplements or submittal of the certified copy of the improved Technical Specifications (ITS).

Application of Standards

The following Standards identified in 10 CFR 50.92 have been used to determine whether the proposed changes involve a Significant Hazards Consideration. Each of the identified proposed changes is evaluated against the three Standards.

Standard I - Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated

The restriction on RCP seal injection flow limits the amount of ECCS flow that would be diverted from the injection path following an accident. This limit is based on safety analysis assumptions that are required because RCP seal injection flow is not isolated during SI. The intent of the LCO 3.5.5 limit on seal injection flow is to make sure that flow through the RCP seal water injection line is low enough to ensure that sufficient centrifugal charging pump injection flow is directed to the RCS via the injection points. The expansion of the Acceptable Range for the flow limits does not impact the assumed ECCS flow that would be available for injection into the RCS following an accident.

There are no hardware changes nor are there any changes in the method by which any safety related plant system performs its safety function. Since the change continues to ensure 100 percent of the assumed charging flow is available, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed editorial changes involve corrections to the improved Technical Specifications that are associated with the original conversion application and supplements or the certified copy of the improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements of the Technical Specifications.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard II - Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated

The proposed changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed changes will not impose any new or eliminate any old requirements. The expansion of the Acceptable Range

for the flow limits does not impact the assumed ECCS flow that would be available for injection into the RCS following an accident.

The proposed editorial changes involve corrections to the improved Technical Specifications that are associated with the original conversion application and supplements or the certified copy of the improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements of the Technical Specifications.

Thus, the changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard III - Involve a Significant Reduction in the Margin of Safety

The proposed change does not affect the acceptance criteria for any analyzed event. There will be no effect on the manner in which safety limits or limiting safety system settings are determined nor will there be any effect on those plant systems necessary to assure the accomplishment of protection functions. The expansion of the Acceptable Range for the flow limits does not impact the assumed ECCS flow that would be available for injection into the RCS following an accident.

The proposed editorial changes involve corrections to the improved Technical Specifications that are associated with the original conversion application and supplements or the certified copy of the improved Technical Specifications. As such, these changes are considered as administrative changes and do not modify, add, delete, or relocate any technical requirements of the Technical Specifications.

Therefore, the changes do not involve a significant reduction in the margin of safety.

Conclusions

Based on the above discussions, it has been determined that the requested technical specification revisions do not involve a significant increase in the probability of consequences of an accident or other adverse conditions over previous evaluations; or create the possibility of a new or different kind of accident or condition over previous evaluations; or involve a significant reduction in a margin of safety. Therefore, the requested license amendment does not involve a significant hazards consideration.

ATTACHMENT III

ENVIRONMENTAL IMPACT DETERMINATION

Environmental Impact Determination

This license amendment request proposes to revise improved Technical Specification LCO 3.5.5, Figure 3.5.5-1 to provide flow limits that address normal and off-normal plant operating conditions. Specifically, the figure is being revised to reflect the flow limits at higher differential pressures and abnormally low seal injection flows.

In addition, editorial errors are being corrected that are attributed to errors associated with the conversion application and supplements or submittal of the certified copy of the improved Technical Specifications (ITS).
normal and off-normal plant operating conditions.

10 CFR 51.22(b) specifies the criteria for categorical exclusions from the requirement for a specific environmental assessment per 10 CFR 51.21. This amendment request meets the criteria specified in 10 CFR 51.22(c)(9) as specified below:

(i) the amendment involves no significant hazards consideration

As demonstrated in Attachment II, the proposed changes do not involve any significant hazards consideration.

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

None of the proposed changes involves a change to the facility or operating procedures that would cause an increase in the amounts of effluents or create new types of effluents.

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

The proposed changes are administrative in nature and do not require any changes to Trip Setpoints. These changes have no relation to occupational radiation exposure, either individual or cumulative.

Based on the above, it is concluded that there will be no impact on the environment resulting from this change and the change meets the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.21 relative to requiring a specific environmental assessment by the Commission.

ATTACHMENT IV

PROPOSED TECHNICAL SPECIFICATION CHANGES

INSERT NEW FIGURE

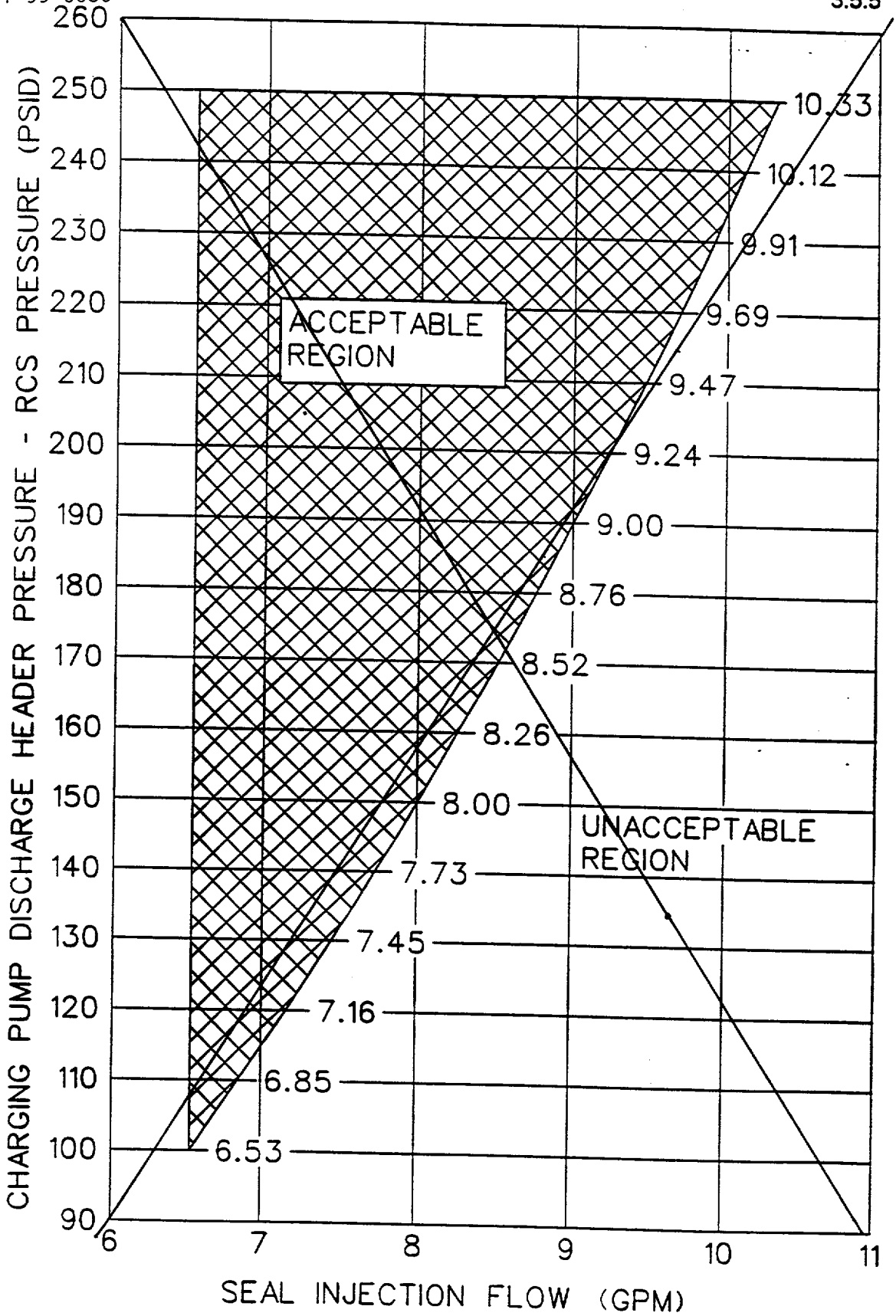

Figure 3.5.5-1 (page 1 of 1)
Seal Injection Flow Limits

Revised Figure 3.5.5-1

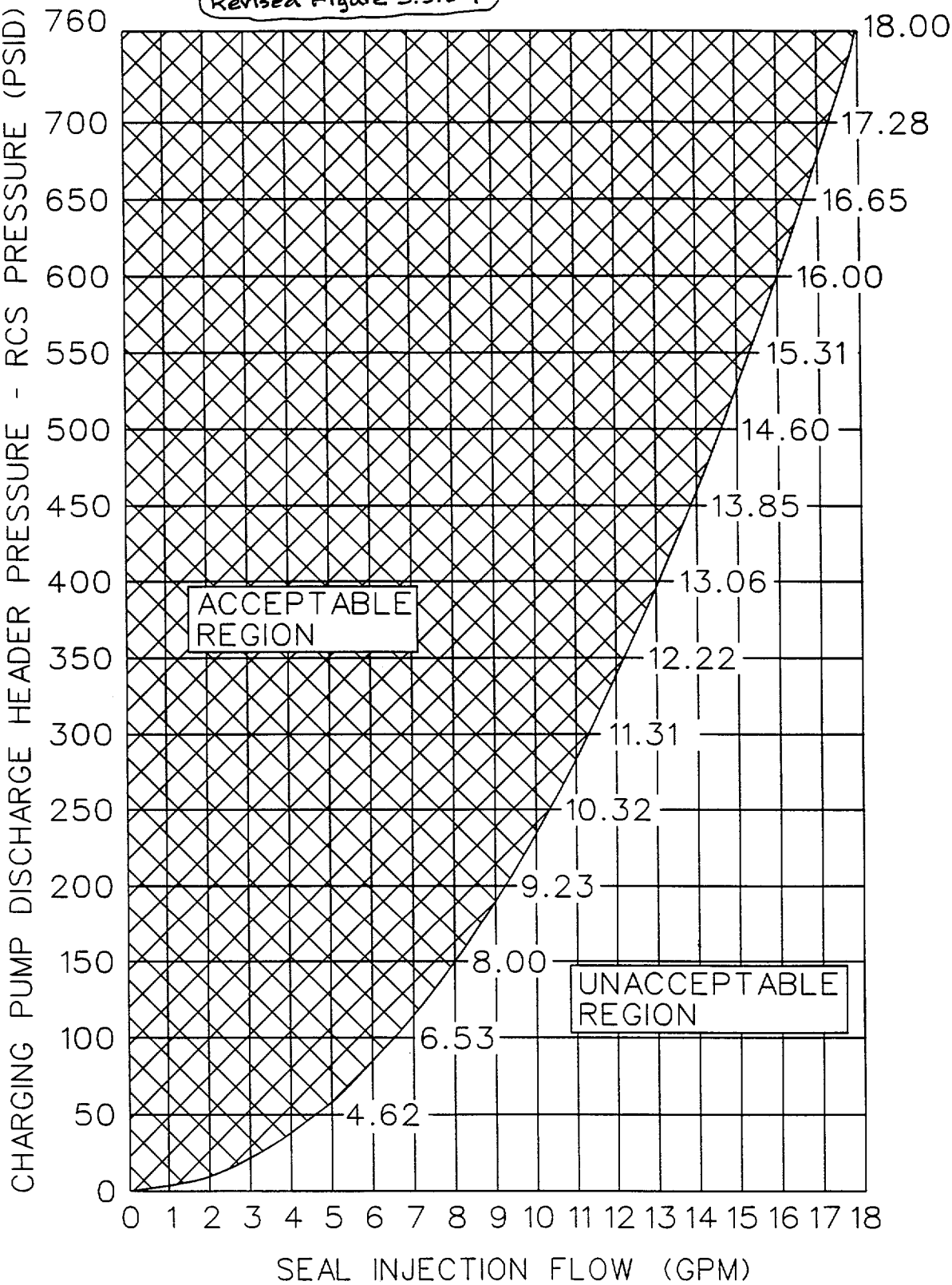

Figure 3.5.5-1 (page 1 of 1)
Seal Injection Flow Limits

Table 3.3.1-1 (page 1 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE [a]
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.14	NA
	3[b], 4[b], 5[b]	2	C	SR 3.3.1.14	NA
2. Power Range Neutron Flux					
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 112.3% RTP
b. Low	1[c],2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 28.3% RTP
3. Power Range Neutron Flux Rate					
a. High Positive Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11	≤ 6.3 % RTP with time constant ≥ 2 sec
b. High Negative Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤6.3% RTP with time constant ≥ 2 sec
4. Intermediate Range Neutron Flux	1[c], 2[d]	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 35.3% RTP
5. Source Range Neutron Flux	2[e]	2	I,J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 1.6 E5 cps
	3[b], 4[b], 5[b]	2	J,K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11	≤ 1.6 E5 cps

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(c) Below the P-10 (Power Range Neutron Flux) interlock.
(d) Above the P-6 (Intermediate Range Neutron Flux) interlock.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlock.

Table 3.3.1-1 (page 4 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE [a]
18. (continued)					
d. Power Range Neutron Flux, P-9	1	4	T	SR 3.3.1.11 SR 3.3.1.13	≤ 53.3% RTP
e. Power Range Neutron Flux, P-10	1,2	4	S	SR 3.3.1.11 SR 3.3.1.13	≥ 6.7% RTP and ≤ 13.3% RTP
f. Turbine Impulse Pressure, P-13	1	2	T	SR 3.3.1.10 SR 3.3.1.13	≤ 12.4% turbine power
19. Reactor Trip Breakers (RTB) [k]	1,2	2 trains	R	SR 3.3.1.4	NA
	3[b], 4[b], 5[b]	2 trains	C	SR 3.3.1.4	NA
20. Reactor Trip Breaker delete spacing	1,2	1 each per RTB	U	SR 3.3.1.4	NA
Undervoltage and Shunt Trip Mechanisms [k]	3[b], 4[b], 5[b]	1 each per RTB	C	SR 3.3.1.4	NA
21. Automatic Trip Logic	1,2	2 trains	Q	SR 3.3.1.5	NA
	3[b], 4[b], 5[b]	2 trains	C	SR 3.3.1.5	NA

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(k) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more required channel(s) inoperable.	L.1 Verify interlock is in required state for existing unit condition.	1 hour
	OR	
	L.2.1 Be in MODE 3.	7 hours
	AND	
	L.2.2 Be in MODE 4.	13 hours
M. One channel inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	M.1 Place channel in trip.	1 hour
	AND	
	M.2 Restore channel to OPERABLE status.	During performance of next COT
N. One train inoperable.	----------NOTE---------- One train may be bypassed for up to 2 hours for surveillance testing provided the other train is OPERABLE. ----------	
	N.1 Be in MODE 3.	6 hours
	AND	
	N.2 Be in MODE 4.	12 hours

(continued)

Table 3.3.2-1 (page 3 of 5)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE [a]
4. Steam Line Isolation (continued)					
d. Steam Line Pressure					
(1) Low	1,2[i], 3[b][i]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 571 psig[c]
(2) Negative Rate - High	3[g][i]	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 125[h] psi
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2[j]	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 SR 3.3.2.14	NA
b. SG Water Level -High High (P-14)	1,2[j]	4 per SG	I	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 79.7% of Narrow Range Instrument Span
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and equirements.				

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
(b) Above the P-11 (Pressurizer Pressure) Interlock and below P-11 unless the Function is blocked.
(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.
(g) Below the P-11 (Pressurizer Pressure) Interlock; however, may be blocked below P-11 when safety injection on low steam line pressure is not blocked.
(h) Time constant utilized in the rate/lag controller is ≥ 50 seconds.
(i) Except when all MSIVs are closed.
(j) Except when all MFIVs are closed.

Table 3.3.2-1 (page 5 of 5)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE[a]
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 ~~SR 3.3.2.6~~ SR 3.3.2.13	NA
b. Refueling Water Storage Tank (RWST) Level - Low Low Coincident with Safety Injection	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 35.5% of instrument span
	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1,2,3	2 per train, 2 trains	F	SR 3.3.2.11	NA
b. Pressurizer Pressure, P-11	1,2,3	3	L	SR 3.3.2.5 SR 3.3.2.9	≤ 1979 psig

(a) The Allowable Value defines the Limiting Safety System Settings. See the Bases for the Trip Setpoints.

Table 3.3.7-1 (page 1 of 1)
CREVS Actuation Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1.	Manual Initiation	1, 2, 3, 4, 5, 6, and (a)	2	SR 3.3.7.4	NA
2.	Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	1, 2, 3, 4, 5, 6, and (a)	2 trains	SR 3.3.7.3	NA
3.	Control Room Radiation-Control Room Air Intakes	1, 2, 3, 4, 5, 6, and (a)	2	SR 3.3.7.1 SR 3.3.7.2 SR 3.3.7.5	(b)
4.	Containment Isolation - Phase A	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a, for all initiation functions and requirements.			

(a) During movement of irradiated fuel assemblies.
(b) Trip Setpoint concentration value ($\mu Ci/cm^3$) is to be established such that the actual submersion dose rate would not exceed 2 mR/hr in the control room.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 ----------NOTE---------- Only required in MODE 1. ---------- Reduce the Power Range Neutron Flux-High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.	36 hours
C Required Action and associated Completion Time not met. OR One or more steam generators with ≥ 4 MSSVs inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within ± 1%.	In accordance with the Inservice Testing Program

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3.7 PLANT SYSTEMS

3.7.13 Emergency Exhaust System (EES)

LCO 3.7.13 Two EES trains shall be OPERABLE.

---NOTE---
The auxiliary building or fuel building boundary may be opened intermittently under administrative controls.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of irradiated fuel assemblies in the fuel building.

---NOTE---
The SIS mode of operation is required only in MODES 1, 2, 3, and 4. The FBVIS mode of operation is required only during movement of irradiated fuel assemblies in the fuel building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EES train inoperable in MODE 1, 2, 3, or 4.	A.1 Restore EES train to OPERABLE status.	7 days
B. Two EES trains inoperable due to inoperable auxiliary building boundary in MODE 1, 2, 3, or 4.	B.1 Restore auxiliary building boundary to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR Two EES trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours
D. One EES train inoperable during movement of irradiated fuel assemblies in the fuel building.	D.1	Place OPERABLE EES train in operation in FBVIS mode.	Immediately
	OR		
	D.2	Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately
E. Two EES trains inoperable due to inoperable fuel building boundary during movement of irradiated fuel assemblies in the fuel building.	E.1	Restore fuel building boundary to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition E not met. OR Two EES trains inoperable during movement of irradiated fuel assemblies in the fuel building for reasons other than Condition E.	F.1 Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Operate each EES train for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.13.2	Perform required EES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.3	Verify each EES train actuates on an actual or simulated actuation signal.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.13.4	Verify one EES train can maintain a negative pressure ≥ 0.25 inches water gauge with respect to atmospheric pressure in the auxiliary building during the SIS mode of operation.	18 months on a STAGGERED TEST BASIS
SR 3.7.13.5	Verify one EES train can maintain a negative pressure ≥ 0.25 inches water gauge with respect to atmospheric pressure in the fuel building during the FBVIS mode of operation.	18 months on a STAGGERED TEST BASIS

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1	Restore DC electrical power subsystem to OPERABLE status.	2 hours
B. Required Action and Associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 128.4 V on float charge.	7 days

(continued)

ATTACHMENT V

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.5 Seal Injection Flow

BASES

BACKGROUND

The function of the seal injection throttle valves (BG-V0198 through BG-V0201) during an accident is similar to the function of the ECCS throttle valves in that each restricts flow from the centrifugal charging pump header to the Reactor Coolant System (RCS).

The restriction on reactor coolant pump (RCP) seal injection flow limits the amount of ECCS flow that would be diverted from the injection path following an accident. This limit is based on safety analysis assumptions that are required because RCP seal injection flow is not isolated during safety injection (SI).

APPLICABLE SAFETY ANALYSES

All ECCS subsystems are taken credit for in the large break loss of coolant accident (LOCA) at full power (Ref. 1). The LOCA analysis establishes the minimum flow for the ECCS pumps. The centrifugal charging pumps are also credited in the small break LOCA analysis. This analysis establishes the flow and discharge head at the design point for the centrifugal charging pumps. The steam generator tube rupture and main steam line break event analyses also credit the centrifugal charging pumps, but are not limiting in their design. Reference to these analyses is made in assessing changes to the Seal Injection System for evaluation of their effects in relation to the acceptance limits in these analyses.

The LCO ensures that seal injection flow will be sufficient for RCP seal integrity but limited so that the ECCS trains will be capable of delivering sufficient water to match boiloff rates soon enough to minimize uncovering of the core following a large LOCA. It also ensures that the centrifugal charging pumps will deliver sufficient water for a small LOCA and sufficient boron to maintain the core subcritical. For smaller LOCAs, the charging pumps alone deliver sufficient fluid to overcome the loss and maintain RCS inventory. Figure 3.5.5-1 was developed using a conservative combination of plant data to establish a maximum flow rate for the seal injection line versus delta pressure between the RCS and charging pump header pressure. Based on the conservative data, Figure 3.5.5-1 ensures adequate flow to the reactor coolant pump seals while ensuring the safety analysis assumption for minimum ECCS flow is maintained while avoiding charging pump runout conditions. Seal injection flow satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

This figure is constructed from the equation $Q = \sqrt{0.4264 * DP}$ where Q = seal injection flow in gpm, and DP = charging pump discharge header minus RCS pressure in units of psid. The constant inside the square root is a function of pipe size, throttle valve resistance (position), and fluid density.

BASES

LCO

The intent of the LCO limit on seal injection flow is to make sure that flow through the RCP seal water injection line is low enough to ensure that sufficient centrifugal charging pump injection flow is directed to the RCS via the injection points (Ref. 2).

The LCO is not strictly a flow limit, but rather a flow limit based on a flow line resistance. In order to establish the proper flow line resistance, a pressure and flow must be known. The flow line resistance is established by adjusting the RCP seal injection flow in the acceptable region of Figure 3.5.5-1 at a given pressure differential between the charging header and the RCS. The flow limits established by Figure 3.5.5-1 ensures that the minimum ECCS flow assumed in the safety analyses is maintained.

The limit on seal injection flow must be met to render the ECCS OPERABLE. If this condition is not met, the ECCS flow may be less than that assumed in the accident analyses.

APPLICABILITY

In MODES 1, 2, and 3, the seal injection flow limit is dictated by ECCS flow requirements, which are specified for MODES 1, 2, 3, and 4. The seal injection flow limit is not applicable for MODE 4 and lower, however, because high seal injection flow is less critical as a result of the lower initial RCS pressure and decay heat removal requirements in these MODES. Therefore, RCP seal injection flow must be limited in MODES 1, 2, and 3 to ensure adequate ECCS performance.

ACTIONS

A.1

With the seal injection flow exceeding its limit, the amount of charging flow available to the RCS may be reduced. Under this Condition, action must be taken to restore the flow to below its limit. The operator has 4 hours from the time the flow is known to be above the limit to correctly position the manual seal injection throttle valves and thus be in compliance with the accident analysis. The Completion Time minimizes the potential exposure of the plant to a LOCA with insufficient injection flow and provides a reasonable time to restore seal injection flow within limits. This time is conservative with respect to the Completion Times of other ECCS LCOs; it is based on operating experience and is sufficient for taking corrective actions by operations personnel.

The centrifugal charging pump discharge header pressure remains essentially constant through all the applicable MODES of this LCO. A reduction in RCS pressure would result in more flow being diverted to the RCP seal injection line than at normal operating pressure. The valve settings established at the prescribed centrifugal charging pump discharge header pressure result in a conservative valve position should RCS pressure decrease.

LIST OF COMMITMENTS

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation (WCNOC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Michael J. Angus, Manager Licensing and Corrective Action at Wolf Creek Generating Station, (316) 364-4077.

COMMITMENT	Due Date/Event
The proposed changes to the WCGS Technical Specifications will be implemented within 30 days of formal NRC approval.	Within 30 days of formal NRC approval.