



FirstEnergy Nuclear Operating Company

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L-12-070

10 CFR 50.90

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

Subject:
Davis-Besse Nuclear Power Station
Docket No. 50-346, License No. NPF-3
License Amendment Request To Revise Emergency Diesel Generator Minimum
Voltage Surveillance Requirements, and Add Figure Axis Labels

FirstEnergy Nuclear Operating Company hereby requests amendment of the operating license for the Davis-Besse Nuclear Power Station. The proposed amendment would revise Technical Specification 3.8.1, "AC Sources - Operating" to change the minimum voltage acceptance criterion for emergency diesel generator surveillance testing in surveillance requirements 3.8.1.8 and 3.8.1.14 from greater than or equal to 4031 volts to greater than or equal to 4070 volts. The proposed amendment would also add axis labels to Technical Specification Figure 3.7.18-1, "Maximum Allowable Steam Generator Level."

The Enclosure provides a description and evaluation of the proposed amendment, including a copy of the existing Technical Specification pages marked up to reflect the proposed amendment and re-typed Technical Specification pages with the proposed amendment incorporated.

Approval of the proposed license amendment is requested by May 30, 2013, and the amendment would be implemented within 60 days of approval.

There are no regulatory commitments contained in this letter. If there are any questions, or if additional information is required, please contact Mr. Phil H. Lashley, Supervisor – Fleet Licensing, at 330-315-6808.

Davis-Besse Nuclear Power Station
L-12-070
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I declare under penalty of perjury that the foregoing is true and correct. Executed on
May 23, 2012.

Sincerely

A handwritten signature in cursive script that reads "Barry S. Allen".

Barry S. Allen

Enclosure:
Evaluation of Proposed Amendment

cc: NRC Region III Administrator
NRC Project Manager
NRC Resident Inspector
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
Utility Radiological Safety Board

Evaluation of the Proposed Amendment
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Subject: License Amendment Request to Revise the Emergency Diesel Generator
Minimum Voltage Surveillance Requirements, and Add Figure Axis Labels

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Attachments

- A. Proposed Technical Specification Changes
- B. Retyped Technical Specification Pages

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend Operating License NPF-3 for the Davis-Besse Nuclear Power Station. The proposed change would revise Technical Specification 3.8.1, "AC Sources - Operating" to change the minimum voltage acceptance criterion for emergency diesel generator (EDG) surveillance testing in surveillance requirements 3.8.1.8 and 3.8.1.14 from greater than or equal to (\geq) 4031 volts (V) to \geq 4070 V. The proposed change would also add axis labels to Technical Specification Figure 3.7.18-1, "Maximum Allowable Steam Generator Level."

2.0 DETAILED DESCRIPTION

The proposed technical specification changes are provided in Attachment A. Attachment A shows deletions with a strike-through and insertions underlined, with a vertical line in the margin showing the area of change. Retyped technical specification pages are provided for information in Attachment B.

The following changes are proposed:

1. Specification 3.8.1, "AC Sources - Operating"

The EDG minimum voltage acceptance criterion specified in surveillance requirements 3.8.1.8 and 3.8.1.14 will be changed from 4031 V to 4070 V as shown below. The specified time of less than or equal to (\leq) 10 seconds and frequency of \geq 58.8 hertz (Hz) are not revised.

Surveillance Requirement 3.8.1.8 - Verify each EDG starts from standby condition and achieves:

- a. In \leq 10 seconds, voltage \geq 4070 V and frequency \geq 58.8 Hz, and

Surveillance Requirement 3.8.1.14 - Verify each EDG starts and achieves:

- a. In \leq 10 seconds, voltage \geq 4070 V and frequency \geq 58.8 Hz, and

2. Specification 3.7.18, "Steam Generator Level"

The following X and Y axis labels will be added to Technical Specification Figure 3.7.18-1.

X axis label: STEAM SUPERHEAT ($^{\circ}$ F)

Y axis label: MAXIMUM ALLOWABLE OPERATING LEVEL (%)

Updated Safety Analysis Report, Subsection 8.3.1.1.4.1, "Emergency Diesel Generators," states that two redundant EDG units, one connected to essential 4160 V bus C1 and the other connected to essential 4160 V bus D1, are provided as onsite standby power sources to supply their respective essential buses upon loss of the normal and reserve power sources. The EDG is capable of attaining rated frequency and voltage approximately 10 seconds after the engine start signal is received.

Surveillance requirements 3.8.1.8.a and 3.8.1.14.a demonstrate that the EDG is capable of attaining the required voltage and frequency within 10 seconds after the engine start signal is received. Technical specification bases associated with surveillance requirements 3.8.1.8 and 3.8.1.14 state that the minimum voltage limit is

based on the voltage required for EDG breaker closure and the minimum frequency limit is based on the recommendations in Safety Guide 9 (Reference 1).

Operating experience indicated that the minimum voltage limit specified in surveillance requirements 3.8.1.8.a and 3.8.1.14.a may be nonconservative. A subsequent evaluation demonstrated that this minimum voltage limit was insufficient to ensure automatic closure of the EDG output circuit breaker. These findings were documented in FirstEnergy Nuclear Operating Company's corrective action program.

The line chart shown in Technical Specification Figure 3.7.18-1 was revised as part of the conversion to the improved technical specifications and submitted in Attachment 1 of a supplement letter dated August 7, 2008 (Reference 2). The change to add axis labels corrects the inadvertent omission of the labels when Figure 3.7.18-1 was submitted in a letter dated October 21, 2008 (Reference 3) with the final copy of the improved technical specifications.

3.0 TECHNICAL EVALUATION

3.1 Evaluation of Minimum Voltage Change

Accident analyses credit the loading of the EDG, following a postulated loss of offsite power, during a loss of coolant accident. The actual EDG start has historically been associated with the safety features actuation system actuation. The EDG loading has been included in the delay time associated with each safety system component requiring EDG supplied power following a loss of offsite power. This delay time includes contributions from the EDG start, EDG loading, and safety injection system component actuation. The response of the EDG to a loss of power must be demonstrated to be within this analysis response time when including the contributions of all portions of the delay. The delay times assumed in the safety analysis for the ESF equipment include the 10 second EDG start delay and, if applicable, the appropriate sequencing delay.

Surveillance Requirement 3.8.1.8.a demonstrates that the EDG can start from standby conditions and achieve the required voltage and frequency within 10 seconds.

Surveillance Requirement 3.8.1.14.a demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal surveillances, and achieve the required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis loss of coolant accident analysis. The minimum voltage limit is based on the voltage required for EDG breaker closure, and the minimum frequency limit is based on the recommendations in Safety Guide 9.

The proposed change will modify the minimum voltage acceptance criteria for surveillance requirements 3.8.1.8.a and 3.8.1.14.a. The existing minimum voltage acceptance criterion of greater than or equal to 4031 V will be increased to a more restrictive minimum voltage acceptance criterion of greater than or equal to 4070 V.

The minimum acceptable voltage of 4070 V was determined based on the bus voltage required by the EDG output circuit breaker voltage permissive relay circuitry. This circuitry requires the voltage to be within a range that is 95 percent of the voltage on the low voltage side of the metering potential transformer (120 V), plus or minus 2-percent

to account for the setting tolerance of the voltage permissive relay. The bus voltage range is then determined by increasing the voltage by the transformer ratio of 35 to 1, resulting in a range of 3910.2 V to 4069.8 V.

The existing minimum frequency of ≥ 58.8 Hz, required by surveillance requirements 3.8.1.8 and 3.8.1.14, is acceptable per Safety Guide 9 and does not need to be changed.

3.2 Evaluation of Axis Label Addition

The proposed addition of axis labels to Technical Specification Figure 3.7.18-1, "Maximum Allowable Steam Generator Level" is an administrative change to reflect the axis labels proposed during the conversion to improved technical specifications, but inadvertently omitted when the final typed pages were forwarded to the NRC before the amendment was issued.

4.0 REGULATORY EVALUATION

FirstEnergy Nuclear Operating Company proposes to revise Technical Specification 3.8.1, "AC Sources - Operating," to change the minimum voltage acceptance criterion for emergency diesel generator surveillance testing in surveillance requirements 3.8.1.8 and 3.8.1.14 from greater than or equal to 4031 volts to greater than or equal to 4070 volts. The proposed change would also add axis labels to Technical Specification Figure 3.7.18-1, "Maximum Allowable Steam Generator Level."

The proposed surveillance requirement changes address a nonconservative minimum voltage acceptance criterion discovered during the review of operating experience. The revised surveillance requirements help to ensure the availability of the standby electrical power supply to mitigate design basis accidents and transients and to maintain the unit in a safe shutdown condition.

The proposed addition of axis labels to Technical Specification Figure 3.7.18-1, "Maximum Allowable Steam Generator Level," is an administrative change to reflect the axis labels proposed during the conversion to improved technical specifications, but inadvertently omitted when the final typed pages were forwarded to the Nuclear Regulatory Commission before the amendment was issued.

4.1 No Significant Hazards Consideration Analysis

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

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

Response: No.

The proposed amendment increases the minimum required emergency diesel generator output voltage and adds axis labels to Figure 3.7.18-1. The increase

in the minimum emergency diesel generator output voltage acceptance value in Technical Specification 8.3.1 surveillance requirements does not adversely affect any of the parameters in the accident analyses. The increase in minimum output voltage ensures that sufficient voltage is available to close the emergency diesel generator output breaker. This conservative change of the emergency diesel generator voltage output acceptance criteria does not affect the probability or consequences of evaluated accidents, but rather provides assurance that emergency diesel generators will provide a sufficient voltage for event mitigation. The change to add axis labels to Figure 3.7.18-1 is administrative in nature. The proposed amendment does not result in failure modes that could initiate an accident, or physical plant modifications that affect the operation or capability of systems, structures or components to mitigate evaluated accidents.

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

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

Response: No.

The proposed change does not introduce a new mode of plant operation or involve a physical modification to the plant. New equipment is not installed with the proposed amendment, nor does the proposed amendment cause existing equipment to be operated in a new or different manner. The change to add axis labels to Figure 3.7.18-1 is administrative in nature. Since the proposed amendment does not involve a change to the plant design or operation, no new system interactions are created by this change. The proposed changes do not result in any new failure modes, and thus cannot initiate an accident different from those previously evaluated.

Therefore, the possibility of a new or different kind of accident from any previously evaluated has not been created.

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

Response: No.

The proposed amendment does not affect emergency diesel generator performance as described in the design basis analyses, including the capability for the emergency diesel generator to attain and maintain required voltage and frequency for accepting and supporting plant safety loads should an emergency diesel generator start signal be received. The operability of the emergency diesel generator continues to provide emergency power to plant equipment that mitigate the consequences of a transient or accident, and maintains the emergency diesel generator's system's capability to respond

within the time assumed in the accident analyses. The change to add axis labels to Figure 3.7.18-1 is administrative in nature.

The proposed change does not introduce a new mode of plant operation or involve a physical modification to the plant. The proposed amendment does not introduce changes to limits established in the accident analysis.

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

Based on the above, FirstEnergy Nuclear Operating Company concludes that the proposed amendment does not involve a 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.

4.2 Applicable Regulatory Requirements/Criteria

Changes described in the license amendment request comply with the following regulations; and continue to meet the intent of the applicable General Design Criteria.

10 CFR Part 50.36, "Technical Specifications," requires in paragraph 50.36(c)(2)(ii)(B) *Criterion 2* that a technical specification limiting condition for operation be established for a process variable, design feature, or operating restriction that is an initial condition of a design basis accident that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The steam generator level limiting condition for operation satisfies Criterion 2.

10 CFR Part 50.36, "Technical Specifications," requires in paragraph 50.36(c)(3) that technical specifications include surveillance requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. The technical specification bases for limiting condition for operation 3.8.1 states that each EDG must be capable of starting, accelerating to rated speed and voltage, connecting to its respective essential bus on detection of bus undervoltage, and this will be accomplished within 10 seconds. Surveillance requirements 3.8.1.8 and 3.8.1.14 verify that the emergency diesel generators can start from standby conditions and restart from a hot condition (respectively) and achieve the required voltage and frequency within 10 seconds.

10 CFR 50, Appendix A, General Design Criterion (GDC) 17, "Electric Power Systems," includes requirements to ensure an onsite electric power system is provided to permit functioning of structures, systems, and components important to safety.

GDC 18, "Inspection and Testing of Electric Power Systems," includes requirements to ensure electric power systems important to safety are designed to permit appropriate periodic inspection and testing of important areas and features.

There is no effect on the emergency diesel generator capability to supply the minimum voltage and frequency required within the time assumed in the safety analyses. The applicable technical specification surveillance will continue to verify the capability of the

emergency diesel generator to start and accelerate to the required speed and voltage within 10 seconds. Maintenance and monitoring of the emergency diesel generator will be maintained per the Maintenance Rule (10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants") and the Mitigating System Performance Indicator Process.

4.3 Conclusions

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.

5.0 ENVIRONMENTAL CONSIDERATION

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

6.0 REFERENCES

1. Safety Guide 9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," dated March 10, 1971.
2. FirstEnergy Nuclear Operating Company Letter L-08-240, "Supplement to License Amendment Request: Conversion of Current Technical Specifications (CTS) to Improved Technical Specifications (ITS) - Volumes 1, 2, 3, 4, 8, 10, 12, 13, 14, and 16, TAC No. MD6398," dated August 7, 2008, Accession Numbers ML082270658 and ML082270669.
3. FirstEnergy Nuclear Operating Company Letter L-08-338, "Copy of Improved Technical Specifications (ITS) TAC No. MD6398," dated October 21, 2008, Accession Number ML083010076.

Attachment A

Proposed Technical Specification Changes

The following is a list of Technical Specification Pages Provided.

3.7.18 - 1*
3.7.18 - 2*
3.7.18 - 3
3.8.1-6
3.8.1-11

* No changes to this page. Page provided for information only.

3.7 PLANT SYSTEMS

3.7.18 Steam Generator Level

LCO 3.7.18 Water Level of each steam generator shall be:

- a. Less than or equal to the maximum water level shown in Figure 3.7.18-1 when in MODE 1 or 2;
- b. \leq 96% Operate Range with LCO 3.3.11, "Steam and Feedwater Rupture Control System (SFRCS) Instrumentation," Function 1 (Main Steam Line Pressure - Low) not bypassed when in MODE 3;
- c. \leq 96% Operate Range with LCO 3.3.11, Function 1 bypassed and both main feedwater (MFW) pumps not capable of supplying feedwater to the steam generators when in MODE 3; and
- d. \leq 50 inches Startup Range with LCO 3.3.11, Function 1 bypassed and one or both MFW pumps capable of supplying feedwater to the steam generators when in MODE 3.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----

Enter applicable Conditions and Required Actions of LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," when high steam generator water level results in exceeding the SDM limits.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Water level in one or more steam generators not within limits.	A.1 Restore steam generator level to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

No Changes to This Page,
Page Provided for Information Only

Steam Generator Level
3.7.18

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify steam generator water level to be within limits.	12 hours

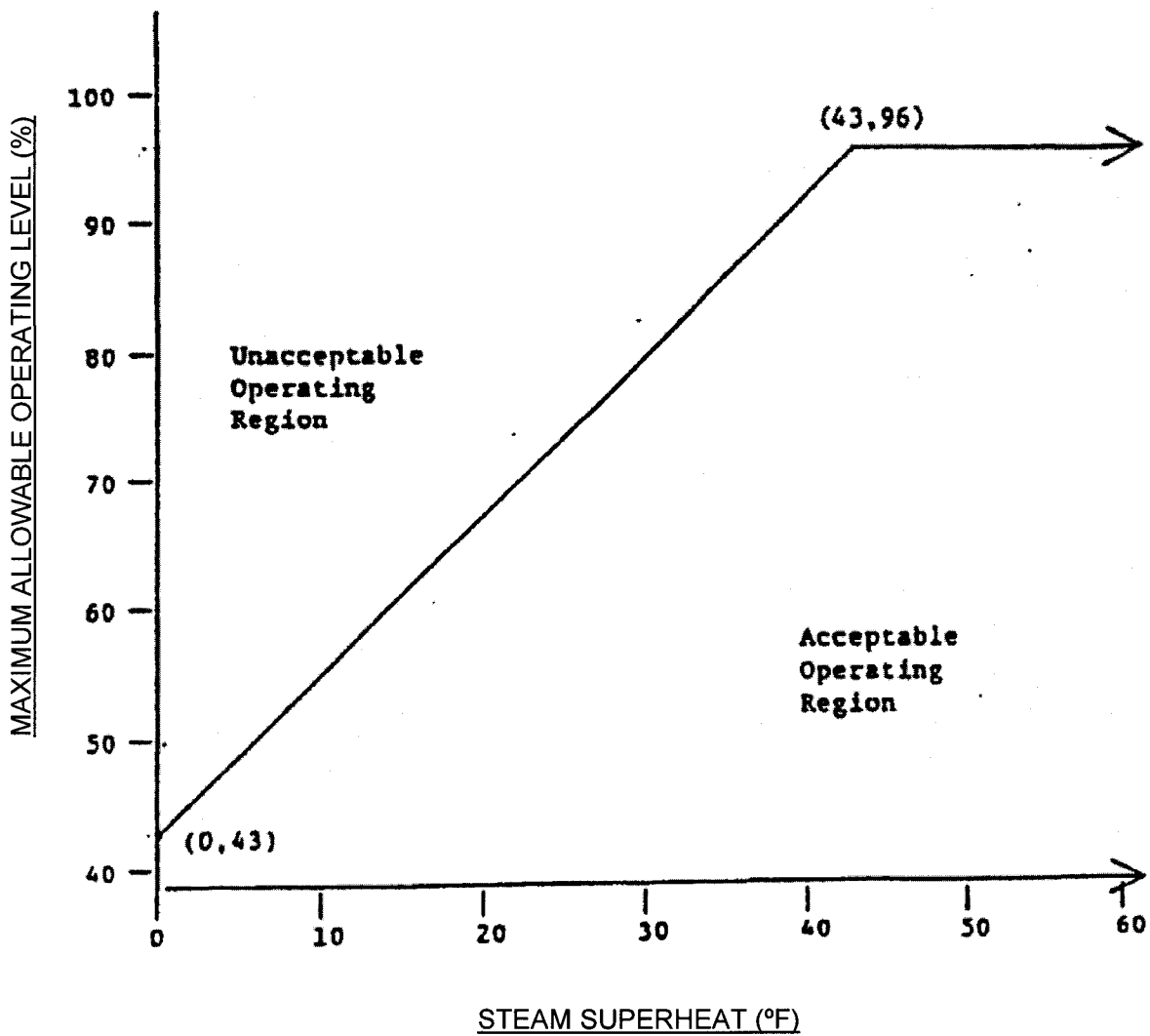


Figure 3.7.18-1 (page 1 of 1)
Maximum Allowable Steam Generator Level

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each emergency load sequencer and each emergency time delay relay.	31 days
SR 3.8.1.7	Verify the fuel oil transfer system operates to transfer fuel oil from fuel oil storage tank to the day tank.	92 days
SR 3.8.1.8	<p>-----NOTE----- All EDG starts may be preceded by an engine prelube period. -----</p> <p>Verify each EDG starts from standby condition and achieves:</p> <ul style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 4034 <u>4070</u> V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3744 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. 	184 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14</p> <p>-----NOTES-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 1 hour loaded ≥ 2340 kW and ≤ 2600 kW.</p> <p> Momentary transients outside of load range do not invalidate this test.</p> <p>2. All EDG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each EDG starts and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 4034 <u>4070</u> V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3744 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz.</p>	<p>24 months</p>

Attachment B

Retyped Technical Specification Pages

The following is a list of the affected pages.

3.7.18 - 3

3.8.1-6

3.8.1-11

Page Provided for Information Only

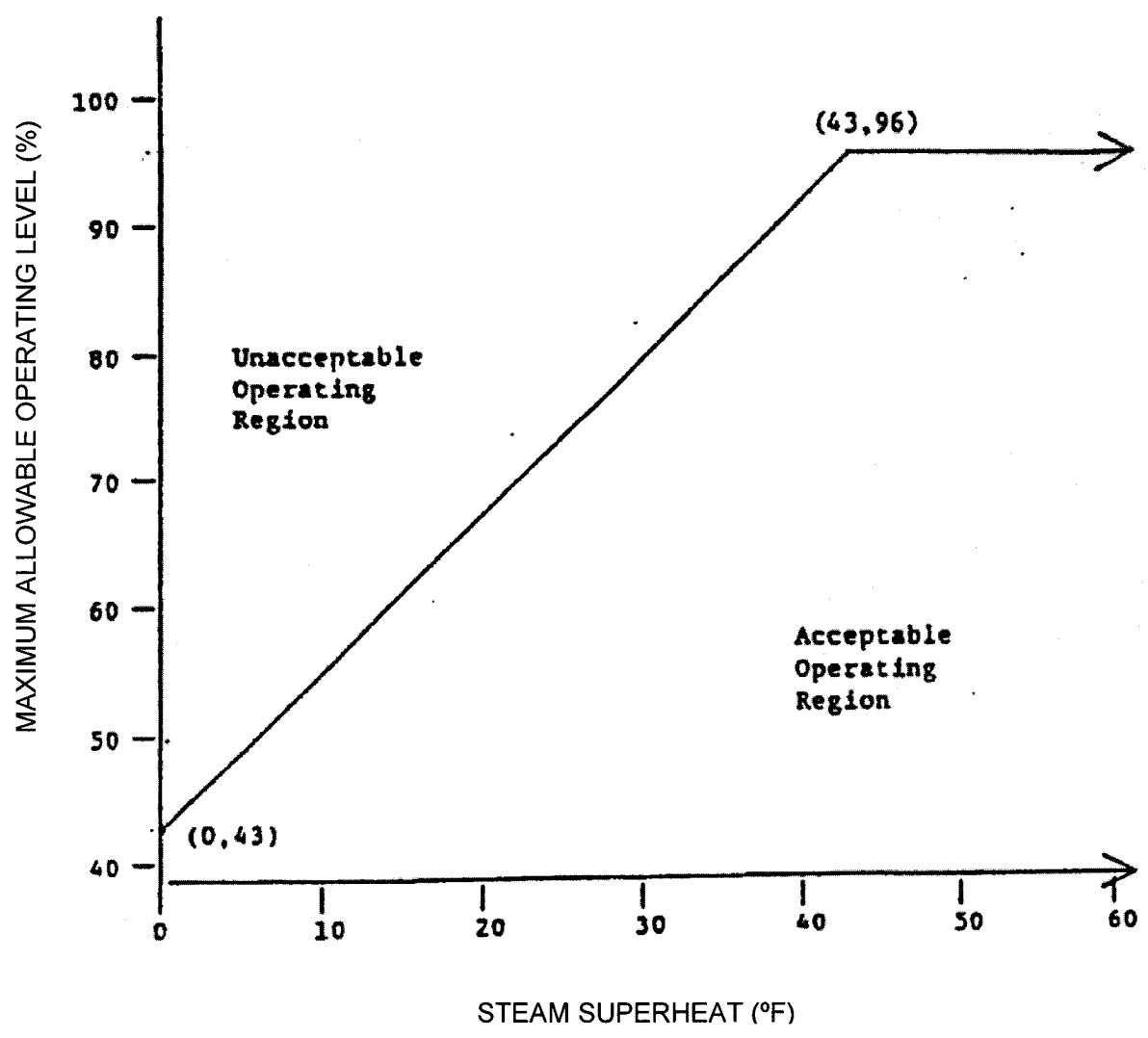


Figure 3.7.18-1 (page 1 of 1)
Maximum Allowable Steam Generator Level

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each emergency load sequencer and each emergency time delay relay.	31 days
SR 3.8.1.7	Verify the fuel oil transfer system operates to transfer fuel oil from fuel oil storage tank to the day tank.	92 days
SR 3.8.1.8	<p>-----NOTE----- All EDG starts may be preceded by an engine prelube period. -----</p> <p>Verify each EDG starts from standby condition and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 4070 V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3744 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz.</p>	184 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14</p> <p>-----NOTES-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 1 hour loaded ≥ 2340 kW and ≤ 2600 kW.</p> <p> Momentary transients outside of load range do not invalidate this test.</p> <p>2. All EDG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each EDG starts and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 4070 V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3744 V and ≤ 4400 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz.</p>	<p>24 months</p>