



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN
OFFICE OF NUCLEAR REACTOR REGULATION

8.1 ELECTRIC POWER - INTRODUCTION

REVIEW RESPONSIBILITIES

Primary - ~~Power Systems~~ Electrical Engineering Branch (PSBEELB)¹

Secondary - None

I. AREAS OF REVIEW

The PSBEELB² reviews the applicant's description of the offsite power grid system with regard to the interrelationships between the nuclear unit, the utility grid, and the interconnecting grids. The PSBEELB³ reviews the onsite power systems to ~~assure~~ ensure⁴ that, given a loss of the offsite power system and a single failure in the onsite power system, sufficient power will be available for mitigating the design basis events. In addition, the EELB reviews to ensure that each unit has the capability to withstand and recover from a station blackout lasting a specified minimum duration.⁵ PSBEELB⁶ also reviews acceptance criteria that will be implemented in the design of the above systems.

II. ACCEPTANCE CRITERIA

Table 8-1, "Acceptance Criteria and Guidelines for Electric Power Systems," lists the acceptance criteria currently applied by the staff to electric power systems. Implementation of these criteria in accordance with applicable guidelines of regulatory guides and branch technical positions will provide assurance that systems will perform their design safety functions when required.

Detailed discussion of specific acceptance criteria presented in Table 8-1 are provided in Standard Review Plan (SRP) Sections 8.2, 8.3.1, 8.3.2, and 8.4 (proposed). Each SRP section

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Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

also contains a description of the technical rationale for applying these criteria to reviews of electrical power systems.⁷

III. REVIEW PROCEDURES

The PSBEELB⁸ reviews Section 8.1 of the SAR safety analysis report (SAR)⁹ to assure ensure the following items are included: a brief description of the utility grid and its interconnections to other grids and to the nuclear unit; a brief general description of the onsite power system; a brief description of the Alternate AC (AAC) power source, if provided for station blackout, and the associated interconnections to safety buses;¹⁰ and the design bases, criteria, standards, regulatory guides, and technical positions that will be implemented in the design of the electric power systems, including a discussion describing the extent to which these criteria and guidelines are followed and a positive statement with regard to conformance of the design to each.

The review is performed as follows:

1. PSBEELB¹¹ will establish that the utility grid is adequately described, and that the interconnections between the nuclear unit, the utility grid, and other grids are clearly defined. The descriptions should state whether facilities are existing or planned; if planned, the respective completion dates should be provided. The descriptions should not conflict with the more detailed information in subsequent sections of Chapter 8 of the SAR and may reference these sections.
2. PSBEELB¹² confirms that the description of the onsite power system is not in conflict with the more detailed information on this system in subsequent sections of Chapter 8, and descriptions may reference these sections.
3. EELB confirms that the AAC power source, if provided for station blackout, is adequately described.¹³
- 34.¹⁴ PSBEELB¹⁵ will confirm that the criteria and guidelines identified as being applicable to the design of electric power systems include those listed in Table 8-1. The SAR should include a discussion regarding the applicability of the criteria and guidelines listed and a statement to the effect that they will be implemented ~~(CP)~~ or are implemented ~~(OL)~~¹⁶ in the design of electrical power systems.
5. The requirements for the offsite and onsite electric power systems are contained in General Design Criterion 17 (GDC 17). Table 8-2, "NRC Staff Interpretation of the Requirements of GDC 17," provides the staff interpretation of GDC 17.¹⁷
- 46.¹⁸ A typical agenda for a site visit to be carried out as part of the operating license review has been included as Appendix 8-B to this SRP section Chapter 8¹⁹.

For standard design certification reviews under 10 CFR Part 52, the procedures above should be followed, as modified by the procedures in SRP Section 14.3 (proposed), to verify that the design set forth in the standard safety analysis report, including inspections, tests, analysis, and

acceptance criteria (ITAAC), site interface requirements and combined license action items, meet the acceptance criteria given in subsection II. SRP Section 14.3 (proposed) contains procedures for the review of certified design material (CDM) for the standard design, including the site parameters, interface criteria, and ITAAC.²⁰

IV. EVALUATION FINDINGS

The reviewer verifies that sufficient information is presented in the SAR and that his²¹ review supports conclusions of the following type, to be included in the staff's safety evaluation report:

Section 8.1 of the safety analysis report provides a brief description of the utility grid and its interconnections to other grids and the nuclear unit, a brief general description of the onsite ac and dc power system, a brief description of the Alternate AC (AAC) power source [if provided for station blackout],²² and the design criteria that has have²³ been implemented in the design of the electric power systems.

The staff has determined that an electric power system design that conforms to the applicable general design criteria and positions of regulatory guides, and branch technical positions set forth in Table 8-1, "Acceptance Criteria and Guidelines for Electric Power Systems," provides²⁴ a sufficient basis for acceptance of the electric power system.

The staff concludes that the design criteria that has been implemented for the electric power system are in accordance with the acceptance criteria set forth in Table 8-1 and are acceptable as noted below in the following sections of Chapter 8.

For design certification reviews, the findings will also summarize, to the extent that the review is not discussed in other safety evaluation report sections, the staff's evaluation of inspections, tests, analyses, and acceptance criteria (ITAAC), including design acceptance criteria (DAC), site interface requirements, and combined license action items that are relevant to this SRP section.²⁵

V. IMPLEMENTATION

The following is intended to provide guidance to applicants and licensees regarding the NRC staff's plans for using this SRP section.

This SRP section will be used by the staff when performing safety evaluations of license applications submitted by applicants pursuant to 10 CFR 50 or 10 CFR 52 for evolutionary designs.²⁶ Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications docketed six months or more after the date of issuance of this SRP section.²⁷

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulations, regulatory guides, and branch technical positions²⁸.

VI. REFERENCES

~~None~~ See Table 8-1 for references.²⁹

ATTACHMENT

STANDARD REVIEW PLAN

TABLE 8-1

ACCEPTANCE CRITERIA AND GUIDELINES FOR ELECTRIC POWER SYSTEMS

The matrix of Table 8-1 identifies the acceptance criteria (denoted by "A") and the guidelines (denoted by "G") and their applicability to the various sections of Chapter 8-θ³⁰. The acceptance criteria define the requirements established by the Commission for power systems important to safety; the guidelines amplify these requirements and provide more explicit basis for evaluation of the conformance of the power systems to these Commission requirements. Acceptance criteria and guidelines are not included herein when the primary review responsibility for these aspects of power systems are reviewed in accordance with sections other than Chapter 8-θ³¹ of the SRP.

The branch technical positions listed herein are contained in Appendix 8-A to ~~Section 8-1~~ Chapter 8³² of the SRP.

ACCEPTANCE CRITERIA AND GUIDELINES FOR ELECTRIC POWER SYSTEMS - TABLE 8-1

CRITERIA	TITLE	APPLICABILITY (SAR/SRP Section)				REMARKS ^a
		8.2	8.3.1	8.3.2	8.4	
1. General Design Criteria (GDC), Appendix A to 10 CFR Part 50						
a. GDC 2	Design Bases for Protection Against Natural Phenomena		A	A		
b. GDC 4	Environmental and Missile Dynamic Effects ³³ Design Bases		A	A		
c. GDC 5	Sharing of Structures, Systems, and Components	A	A	A		
d. GDC 17	Electric Power Systems	A	A	A		
e. GDC 18	Inspection and Testing of Electrical Power Systems	A	A	A		
f. GDC 50	Containment Design Bases		A	A		

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APPLICABILITY (SAR/SRP Section)							
CRITERIA	TITLE	8.2	8.3.1	8.3.2	8.4	REMARKS ^a	
2.	10 CFR 50.34	Contents of Applications; Technical Information				^b See Table footnote below ³⁴	
a.	50.34(f)(2)(v)	(Related to TMI Item I.D.3)		A	A	^b See Table Item 6.a and footnote below ³⁵	
b.	50.34(f)(2)(xiii)	(Related to TMI Item II.E.3.1)		A		^b See Table Item 6.b and footnote below ³⁶	
c.	50.34(f)(2)(xx)	(Related to TMI Item II.G.1)		A		^b See Table Item 6.b and footnote below ³⁷	
3.	10 CFR 50.63	Loss of All Alternating Current Power		A	A	A ³⁸	
24. ³⁹	Regulatory Guides (RG)						
a.	RG 1.6	Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems			G	G	
b.	RG 1.9	Selection, Design, and Qualification, and Testing of Emergency Diesel-Generator Units Used as Standby (Onsite) Class 1E Onsite Electric Power Systems at Nuclear Power Plants ⁴⁰			G		See IEEE Std 387-1984, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations" ⁴¹
c.	RG 1.32	Use of IEEE Std 308, "Criteria for Class 1E Safety-Related Electric Power Systems for Nuclear Power Generating Stations" ⁴²		G	G	G	See IEEE Std 308-1974, "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations" ⁴³
d.	RG 1.47	Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems		G ⁴⁴	G	G	
e.	RG 1.53	Application of the Single-Failure Criterion to Nuclear Power Plant Protection Systems			G	G	See IEEE Std 379-1972, "IEEE Trial-Use Guide for the Application of the Single-Failure Criterion to Nuclear Power Generating Station Protection Systems" (also designated ANSI N41.2) ⁴⁵

APPLICABILITY (SAR/SRP Section)

CRITERIA	TITLE	8.2	8.3.1	8.3.2	8.4	REMARKS ^a
e ⁴⁶ . RG 1.63	Electric Penetration Assemblies in Containment Structures for Light-Water-Cooled ⁴⁷ Nuclear Power Plants		G	G		See IEEE Std 242-1986, "IEEE Recommended Practice for Protection and Coordination in Industrial and Commercial Power Systems"; IEEE Std 317-1983 (Reaffirmed 1992), "IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations"; and Section 5.4 of IEEE Std 741-1986, "Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations" ⁴⁸
fg. RG 1.75	Physical Independence of Electric Systems		G	G		See IEEE Std 384-1974, "IEEE Trial-Use Standard Criteria for Separation of Class 1E Equipment and Circuits" (also designated ANSI N41.14) ⁴⁹
gh. RG 1.81	Shared Emergency and Shutdown Electric Systems for Multi-Unit Nuclear Power Plants	G ⁵⁰	G	G		
hi. RG 1.106	Thermal Overload Protection for Electric Motors on Motor-Operated Valves		G	G		
i. RG 1.108	Periodic Testing of Diesel Generators Used as Onsite Power Systems at Nuclear Power Plants		G ⁵¹			
j. RG 1.118	Periodic Testing of Electric Power and Protection Systems		G	G		See IEEE Std 338-1987 (Reaffirmed 1994), "Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems" ⁵²
k. RG 1.128	Installation Design and Installation of Large Lead Storage Batteries for Nuclear Power Plants			G		See IEEE Std 484-1975, "IEEE Recommended Practice for Installation Design and Installation of Large Lead Storage Batteries for Generating Stations and Substations" ⁵³

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APPLICABILITY (SAR/SRP Section)						
CRITERIA	TITLE	8.2	8.3.1	8.3.2	8.4	REMARKS ^a
l. RG 1.129	Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Nuclear Power Plants			G		See IEEE Std 450-1975, "IEEE Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries for Generating Stations and Substations" ⁵⁴
m. RG 1.153	Criteria for Power, Instrumentation, and Control Portions of Safety Systems		G	G		See IEEE Std 603-1980, "Criteria for Safety Systems for Nuclear Power Generating Stations" ⁵⁵
n. RG 1.155	Station Blackout	G	G	G	G	See NUMARC-8700, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," November 1987 ⁵⁶
o. RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants		G			See NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," May 1993 ⁵⁷
35. ⁵⁸	Branch Technical Positions					
a. BTP ICSB 4	Requirements on Motor-Operated Valves in the ECCS Accumulator Lines		G			
b. BTP ICSB 8 (PSB)	Use of Diesel-Generator Sets for Peaking		G			
c. BTP ICSB 11 (PSB)	Stability of Offsite Power Systems	G				
d. BTP ICSB 18 (PSB)	Application of the Single Failure Criterion to Manually-Controlled Electrically-Operated Valves		G			
e. BTP ICSB 21	Supplemental Guidance for Application of Regulatory Guide 1.47 Bypass and Inoperable Status Indication for Engineered Safety Features Systems ⁵⁹	G ⁶⁰	G	G		
f. BTP PSB-1	Adequacy of Station Electric Distribution System Voltages	G	G ⁶¹			

APPLICABILITY (SAR/SRP Section)						
CRITERIA	TITLE	8.2	8.3.1	8.3.2	8.4	REMARKS ^a
h.	BTP PSB-2		G			
Criteria for Alarms and Indications Associated with Diesel-Generator Unit Bypassed and Inoperable Status						
46. ⁶²	NUREG Reports					
a.	NUREG-0718, Revision 1		G	G		See TMI Item I.D.3, "Safety System Status Monitoring," regarding application of RG 1.47 ⁶³
b.	NUREG-0737		A			See TMI Items II.E.3.1, "Emergency Power Supply for Pressurizer Heaters," and II.G.1, "Emergency Power for Pressurizer Equipment" ⁶⁴
ac.	NUREG/CR-0660		G			Reference Only ⁶⁵
Enhancement of Onsite Diesel Generator Reliability						

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^a The staff will review new applications using the latest version of Codes and standards endorsed by the NRC. Proposed use of unendorsed versions of Codes and standards will be reviewed on a case-by-case basis.⁶⁶

^b These criteria are applied only for applicants subject to 10 CFR 50.34(f) requirements.⁶⁷

TABLE 8-2⁶⁸

NRC STAFF INTERPRETATION
OF THE
REQUIREMENTS OF GDC 17

This criterion presents the minimum requirements for the offsite and onsite electric power systems deterministically, i.e., in terms of specific system and circuit configuration and functional requirements. The only requirement in GDC 17 for explicitly meeting the single failure criterion is with regard to the onsite power system. In applying GDC 17, it has been useful for the staff to also interpret the deterministic requirements for the offsite power system in terms of required conformance to the single failure criterion. The text of GDC 17 at the left is keyed to the staff interpretation of its deterministic requirements, and the corresponding staff interpretations regarding conformance to single failure:

GDC 17	Staff Interpretation
<p><i>Criterion 17--Electric power systems.</i> An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.</p>	<p>a. An offsite power system and an onsite power system shall be provided, each independent of the other and capable of providing power for all safety functions. [The offsite and onsite power systems considered together must meet the single failure criterion on a system basis without loss of capability to provide power for <u>all</u> safety functions; additionally, in view of requirement (b) below, the two systems considered together must be capable of sustaining a double failure, one of which is complete loss of offsite power, without loss capability to provide power for the <u>minimum required</u> safety functions.]</p>
<p>The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.</p>	<p>b. The complete onsite electric power system (Class 1E) must be capable of sustaining a single failure without loss of capability to provide power for the <u>minimum required</u> safety function.</p>
<p>Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable.</p>	<p>c. The offsite system shall be comprised of two physically independent circuits connecting the transmission network (grid) to the onsite distribution system (safety busses). [Separate transmission line towers are required but common switchyard structures are acceptable. No requirement for meeting single failure, and in the absolute sense single failure cannot be met because there is only one power source, the grid.]</p>

GDC 17	Staff Interpretation
<p>Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded.</p>	<p>d. Each of the two required offsite power circuits shall be designed to be available in sufficient time to affect safe shutdown in event of loss of all onsite power and the loss of the other offsite circuit. [the second circuit has been designated by the staff as the “delayed access circuit.” The offsite power system, i.e., the two circuits considered together, must meet the single failure criterion, but only with respect to the delayed access circuit function.]</p>
<p>One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.</p>	<p>e. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident. [The staff has designated this circuit as the “Immediate access circuit.” Since only one such circuit is required, the offsite power system need not meet the single failure criterion with respect to its immediate access function.]</p>
<p>Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.</p>	<p>f. Analyses (performed by the utility) must verify that the grid remains stable in event of loss of the nuclear unit generator, the largest other unit on the grid or the most critical transmission line. [There is no specific requirement for meeting single failure. However, overlapping requirement (a) above requires the offsite/onsite power systems to meet single failure on a system basis.]</p>

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SRP Draft Section 8.1
Attachment A - Proposed Changes in Order of Occurrence

Item numbers in the following table correspond to superscript numbers in the redline/strikeout copy of the draft SRP section.

Item	Source	Description
1.	Current PRB name and abbreviation	Changed PRB to Electrical Engineering Branch (EELB).
2.	Current PRB name and abbreviation	Changed PRB to EELB.
3.	Current PRB name and abbreviation	Changed PRB to EELB.
4.	Editorial modification	Changed "assure" to "ensure" (global change for this section).
5.	10 CFR 50.63, Station Blackout	Added sentence to AREAS OF REVIEW to reflect the requirements of 10 CFR 50.63.
6.	Current PRB name and abbreviation	Changed PRB to EELB.
7.	SRP-UDP format item	Provided a general statement concerning the development of technical rationale for the acceptance criteria set forth in each section of SRP Chapter 8.0.
8.	Current PRB name and abbreviation	Changed PRB to EELB.
9.	Editorial modification	Defined "SAR" as "safety analysis report."
10.	10 CFR 50.63, Station Blackout	Added statement to REVIEW PROCEDURES to reflect requirements resulting from 10 CFR 50.63.
11.	Current PRB name and abbreviation	Changed PRB to EELB.
12.	Current PRB name and abbreviation	Changed PRB to EELB.
13.	10 CFR 50.63, Station Blackout	Added item to REVIEW PROCEDURES to reflect requirements resulting from 10 CFR 50.63.
14.	SRP-UDP format item	Revised item number to reflect consecutive numbering.
15.	Current PRB name and abbreviation	Changed PRB to EELB.
16.	Incorporation of PRB Comment	Deleted reference to OL and CP reviews as requested by the PRB.
17.	Integrated Impact 1548	Added discussion of new Table 8-2 for staff interpretation of GDC-17.
18.	SRP-UDP format item	Revised item number to reflect consecutive numbering.
19.	Editorial	Updated to reflect the current location of Appendix 8-A.
20.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard paragraph to address application of Review Procedures in design certification reviews.
21.	Editorial modification	Changed to reflect nongender-specific wording.

SRP Draft Section 8.1
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
22.	10 CFR 50.63, Station Blackout	Added statement to EVALUATION FINDINGS to reflect requirements resulting from 10 CFR 50.63.
23.	Editorial modification	Changed "has" to "have" to provide noun/verb agreement.
24.	Editorial	Revised to improve grammar.
25.	SRP-UDP Format Item, Implement 10 CFR 52 Related Changes	To address design certification reviews a new paragraph was added to the end of the Evaluation Findings. This paragraph addresses design certification specific items including ITAAC, DAC, site interface requirements, and combined license action items relevant to this SRP section.
26.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard sentence to address application of the SRP section to reviews of applications filed for evolutionary designs under 10 CFR Part 52, as well as Part 50.
27.	SRP-UDP Guidance	Added standard paragraph to indicate applicability of this section to reviews of future applications.
28.	Editorial	Revised to reflect that schedule information is also contained in some regulations (e.g., 10 CFR 50.63) and branch positions.
29.	Editorial modification	Changed "None" to "See Table 8-1 for references" because the table consists of a list of pertinent standards and guidance documents related to electric power systems.
30.	Editorial	Revised to eliminate decimal numbering for Chapter 8 consistent with other references to chapters of the SRP in other SRP sections.
31.	Editorial	Revised to eliminate decimal numbering for Chapter 8 consistent with other references to chapters of the SRP in other SRP sections.
32.	Editorial	Updated to reflect the current location of Appendix 8-A.
33.	Current title of GDC 4	Provided current title of GDC 4.
34.	Integrated Impact 1003	Added table subsection for listing of relevant 10 CFR 50.34(f) requirements related to TMI Action Plan Items.
35.	Integrated Impact 1003	Added 10 CFR 50.34(f)(2)(v) related to TMI Item I.D.3 described in NUREG-0718 as relevant review criteria.
36.	Editorial, See Integrated Impact 1041 for SRP Section 8.3.1	Under Impact 1041, citation of 10 CFR 50.34(f)(2)(xiii) related to TMI Item II.E.3.1 will be added in 8.3.1 as acceptance criteria for applicants subject to 10 CFR 50.34(f). Thus updated the table to reflect the applicability 10 CFR 50.34(f)(2)(xiii) as acceptance criteria for SRP Section 8.3.1.

SRP Draft Section 8.1
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
37.	Editorial, See Integrated Impact 990 for SRP Section 8.3.1	Under Impact 990, citation of 10 CFR 50.34(f)(2)(xx) related to TMI Item II.G.1 will be added in 8.3.1 as acceptance criteria for applicants subject to 10 CFR 50.34(f). Thus updated the table to reflect the applicability 10 CFR 50.34(f)(2)(xx) as acceptance criteria for SRP Section 8.3.1.
38.	Integrated Impact No. 362	Added reference to 10 CFR 50.63 as applicable acceptance criteria for all remaining Chapter 8 SRP sections.
39.	SRP-UDP format item	Revised item number to reflect consecutive numbering.
40.	Integrated Impacted No. 360	Revised the title RG 1.9 (Rev. 3), which was issued in July 1993 and incorporates guidance previously provided in RG 1.108, which was withdrawn August 5, 1993.
41.	Integrated Impact No. 1521	Revised the reference to IEEE 387 to include the 1984 revision date. RG 1.9, Rev. 3 endorses IEEE 387-1984. Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.
42.	Current revision of RG 1.32	Changed to reflect the title of RG 1.32 (Rev. 2).
43.	Integrated Impact No. 1518	Revision 2 of RG 1.32 endorses IEEE 308-1974, thus revised to cite the 1974 version. Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.
44.	Integrated Impact No. 364	Deleted identification as guidance applicable to SRP Section 8.2. RG 1.47 does not address offsite power systems. In addition, SRP Section 8.2 does not discuss or reference RG 1.47 either as guidance or as acceptance criteria.
45.	Editorial	Added listing of RG 1.53/IEEE Std 379 as guidance applicable to SRP Sections 8.3.1 and 8.3.2 since they are explicitly cited as guidance in those SRP sections.
46.	Editorial	Renumbered remaining table subsection 4 items to reflect deletion of a preceding entry.
47.	Reference verification	Revised to reflect title of Rev. 3 of the RG.

SRP Draft Section 8.1
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
48.	Integrated Impact 1519, Incorporation of PRB Comment	Revised the reference to IEEE 317 to include the 1983 (Reaffirmed 1992) revision date. RG 1.63 currently endorses IEEE 317-1983 and Section 5.4 of IEEE 741-1986. IEEE 317-1983 was reaffirmed in 1992. Also, since subsection VI references Table 8-1 for reference listing, added title of the publications consistent with SRP-UDP format requirements for listing of SRP section references. At the request of the PRB (see February 29, 1996 Memorandum to R.W. Borchardt from J.A. Calvo (TAC NO. M88581) transmitting comments on draft revisions to SRP Section 8.3.1), reference to IEEE 242-1986 was also added although Section 5.4 of IEEE 741-1986 cites IEEE 242-1975. The PRB's request to cite IEEE 741-1990 could not be honored under the SRP-UDP since RG 1.63 endorses the 1986 version.
49.	Integrated Impact 1523	Revision 2 of RG 1.75 endorses IEEE 384-1974, thus revised to cite the 1974 version. Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.
50.	Integrated Impact No. 363	Deleted identification as guidance applicable to SRP Section 8.2 because RG 1.81 does not address sharing of offsite power systems. In addition, RG 1.81 is not referenced or discussed in SRP Section 8.2 as relevant guidance.
51.	Integrated Impact No. 357	RG 1.108 was withdrawn August 5, 1993, and guidance it contained was incorporated into RG 1.9, Rev. 3 which is included as guidance in Table 8-1 of SRP Section 8.1. Thus deleted its listing from the table.
52.	Integrated Impact No. 1520	Revision 3 of RG 1.118 endorses IEEE 338-1987. The standard has been reaffirmed in 1994. This reference is thus updated to IEEE 338-1987 (Reaffirmed 1994). Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.
53.	Integrated Impact 1524	Revision 1 of RG 1.128 endorses IEEE 484-1975, thus revised to cite the 1975 version. Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
54.	Integrated Impact No. 1522	Revision 1 of RG 1.129 endorses IEEE 450-1975, thus revised to cite the 1975 version. Also, since subsection VI references Table 8-1 for reference listing, added title of the publication consistent with SRP-UDP format requirements for listing of SRP section references.
55.	Integrated Impact No. 359	Added reference to RG 1.153, which was published in December 1985 and provides a method acceptable to NRC for complying with the Commission's regulations with regard to the design, reliability, qualification, and testability of the power, instrumentation, and control portions of safety systems. With some exceptions, the RG also endorses IEEE 603-1980. Also, since subsection VI references Table 8-1 for reference listing, added title of the standard consistent with SRP-UDP format requirements for listing of SRP section references.
56.	Integrated Impact No. 354	Added reference to Regulatory Guide 1.155, which provides guidance for compliance with 10 CFR 50.63 and reflects that the guidance in NUMARC-8700 is acceptable subject to the regulatory positions of the RG. Also, since subsection VI references Table 8-1 for reference listing, added title and publication date of NUMARC-8700 consistent with SRP-UDP format requirements for listing of SRP section references.
57.	Editorial, See ROC 855 for SRP Section 8.3.1	Added listing of RG 1.160 as guidance for monitoring the effectiveness of maintenance activities for emergency ac power sources since ROC adds the RG as a guidance document in SRP Section 8.3.1.
58.	SRP-UDP format item	Revised item number to reflect consecutive numbering.
59.	Editorial	Revised for consistency with the title of this BTP.
60.	Integrated Impact No. 364	Deleted identification of BTP ICSB 21, "Guidance for Application of RG 1.47" as guidance applicable to SRP Section 8.2 because RG 1.47 does not address offsite power systems. In addition, SRP Section 8.2 does not discuss or reference RG 1.47 either as guidance or as acceptance criteria.
61.	Editorial, Incorporation of PRB Comment	Corrected applicability information at the request of the PRB.
62.	SRP-UDP format item	Revised item number to reflect consecutive numbering.

SRP Draft Section 8.1
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
63.	Integrated Impact 1003	Added 10 CFR 50.34(f)(2)(v) related to TMI Item I.D.3 described in NUREG-0718 as relevant review criteria. NUREG-0718 provides guidance for satisfying 10 CFR 50.34(f)(2)(v) and is thus added as guidance applicable to SRP sections 8.3.1 and 8.3.2.
64.	Editorial	SRP Section 8.3.1 cites TMI Items II.E.3.1 and II.G.1 as acceptance criteria. These items were clarified and approved for implementation as described in NUREG-0737. Thus updated the table to reflect the applicability of these TMI items as acceptance criteria for SRP Section 8.3.1.
65.	Proper use of NUREG/CR (Contractor report)	Changed REMARKS to reflect the status of NUREG/CR-0660 as merely a reference document.
66.	Integrated Impact No. 373	Added footnote to Table 8-1. The staff policy concerning the use of codes and standards that have not been endorsed by the NRC was stated in SECY-93-087 and approved by the Commission on July 21, 1993.
67.	Integrated Impact 1003	Added table footnote regarding the applicability of relevant 10 CFR 50.34(f) requirements related to TMI Action Plan Items.
68.	Integrated Impact 1548	Added new Table 8-2 to include NRC staff interpretation of GDC 17.

SRP Draft Section 8.1
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
354	Adds Regulatory Guide 1.155.	Table 8-1, item 4.n (RG 1.155)
357	Deletes reference to RG 1.108.	Table 8-1, former item 2.i (RG 1.108) (deleted)
359	Adds reference to Regulatory Guide 1.153 and incorporates IEEE 603-1980.	Table 8-1, item 4.m (RG 1.153)
360	Revises title of Regulatory Guide 1.9 and incorporates latest version of IEEE 387.	Table 8-1, item 4.b (RG 1.9)
362	Adds 10 CFR 50.63 to Table 8-1.	Table 8-1, item 3
363	Deletes reference to SRP Section 8.2.	Table 8-1, item 4.h (RG 1.81) (deleted applicability to SRP Section 8.2)
364	Deletes reference to SRP Section 8.2.	Table 8-1, item 4.d (RG 1.47) & 5.e (BTP ICSB 21) (deleted applicability to SRP Section 8.2)
373	Adds footnote stating NRC policy concerning the use of codes and standards endorsed by NRC.	Table 8-1, footnote a
1003	Revise Acceptance Criteria to cite the requirement of 10 CFR 50.34(f)(2)(v) regarding the implementation of Regulatory Guide 1.47.	Table 8-1, items 2, 2.a, and 6.a, footnote b
1518	Consider updating the citation of IEEE 308 to cite the 1974 version.	Table 8-1, item 4.c (RG 1.32)
1519	Consider updating the citation of IEEE 317 to cite the 1983 (R92) version.	Table 8-1, item 4.f (RG 1.63)
1520	Consider updating the citation of IEEE 338 to cite the 1987 (R94) version.	Table 8-1, item 4.j (RG 1.118)
1521	Consider updating the citation of IEEE 387 to cite the 1984 version.	Table 8-1, item 4.b (RG 1.9)
1522	Consider updating the citation of IEEE 450 to cite the 1975 version.	Table 8-1, item 4.l (RG 1.129)
1523	Consider updating the citation of IEEE 384 to cite the 1974 version.	Table 8-1, item 4.g (RG 1.75)
1524	Consider updating the citation of IEEE 484 to cite the 1975 version.	Table 8-1, item 4.k (RG 1.128)
1548	Consider adding the staff interpretation of the requirements of GDC 17 to Section 8.1.	Review Procedures; Table 8-2