PACAKGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

PART F

JUSTIFICATION FOR DIFFERENCES
(JFD)

from

NUREG-1431
IMPROVED STANDARD TECHNICAL SPECIFICATIONS

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

Part F

PACKAGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

JUSTIFICATION FOR DIFFERENCES FROM IMPROVED STANDARD TECHNICAL SPECIFICATIONS (NUREG-1431) AND BASES

See Part E for specific proposed wording and location of referenced deviations.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	29	PI is a two loop plant; thus changes have been made throughout the Specifications and Bases to make them read correctly. The bracketed number of loops has been replaced with "two" corresponding to the PI plant design. Since PI only has two loops and two accumulators, "or more" is not needed on Condition D.
	30	Not used.
TA	31	Incorporates approved TSTF-117, Rev. 0, which corrects the inaccuracy in wording.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	32	This SR requires verification of valve position every 12 hours. Clarification is included that this only applies to "motor operated" valves since this verification is from the control room and only applies to motor operated valves. This change has been made in the Surveillance Requirements and associated Bases.
CL	33	The bracketed volumes in gallons have been replaced by the PI specific volume in cubic feet which is the CTS requirement. The percent (%) level is included as a parenthetical requirement to maintain consistency with the indication available to the control room operators.
X	34	This change implements a separate proposed Accumulator AOT LAR to be submitted early 2001 which will increase the ECCS accumulator AOT to 24 hours in accordance with NRC approved WCAP-15049-A, "Risk-Informed Evaluation of an Extension to Accumulator Completion Times." This WCAP was approved by the NRC on February 19, 1999; it applies to PI; and in anticipation of approval of the Accumulator AOT LAR this change is included in the ITS.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	35	Based on current license basis, the maximum accumulator boron concentration is not included. The accumulator is always filled from the RWST which does have a maximum boron requirement (3.5.4) of 3500 ppm. Therefore the accumulator maximum boron concentration is also limited to 3500 ppm. Since 3500 ppm is acceptable for the accumulators, a maximum boron requirement would be redundant and unnecessary.
CL	36	The requirement to verify accumulator boron concentration within 6 hours after its volume has increased from sources other than the RWST was not included. The accumulator will normally be maintained greater than 2500 ppm since it can only be filled from the RWST. (This will be 2600 ppm when LAR entitled, "Removal of Boric Acid Storage Tanks from the Safety Injection System," submitted April 17, 2000 is approved.) If the accumulator were at minimum level (1250) and RCS water at 0 ppm leaked in until it was at the maximum level (1290), approximately 300 gallons would leak in. The resulting accumulator boron concentration would be 2422 ppm which is well above the required 1900 ppm. Level and concentrations such as these would be observed and corrected prior to violating any limits. Thus, the requirement to verify boron concentration within 6 hours of a specified level change is unnecessary.
TA	37	Incorporates approved TSTF-153, Rev. 0, provisions which relocate the Applicability Note to the LCO.

Difference Category	Difference Number 3.5-	Justification for Differences
PA	38	The reference to pressure isolation valve testing SR has been revised to the PI ITS SR number.
CL	39	The PI LTOP enable temperature is 310 F; thus the SI pumps will be allowed to operate in MODE 3 without LTOP restrictions. Therefore this note is not applicable and has not been included. Since this note is not included, approved TSTF-233 which modifies this note has NOT been incorporated.
TA	40	This change incorporates approved TSTF-325, Rev. 0.
CL	41	PI CTS specify ECCS valves positions and associated breaker positions; however, SR 3.5.2.1, which requires verification that the specified valves are in their required position, is a new requirement for the PI TS. Thus the ISTS requirement to further verify that power is removed from each valve on a 12 hour interval is not included. These isolation valves are maintained in their positions by administrative control. All manipulations and maintenance activities associated with these valves requires independent verification of the valve position and breaker or DC control power status prior to declaring it OPERABLE. Verification every 12 hours that these valves are in their listed position provides appropriate controls to ensure that they have not been changed without operations knowledge. A check of the breaker and DC control power status will be performed during the performance of another SR which is new to the PI TS, SR 3.5.2.3.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	42	The listing of valves for new SR 3.5.2.1 was developed based on CTS 3.3.A.1.g.(1) and (2). The PI designated valve numbers for each unit are provided for ease of operator use.
X	43	ISTS SR 3.5.2.3 is not included in the PI ITS or Bases since this requirement is not contained in the CTS and is not considered necessary to ensure operability of the ECCS systems. The periodic testing of the ECCS systems in accordance with the IST program provides sufficient means to eliminate gas accumulation in these systems. A new SR 3.5.2.3 with Bases is included which requires verification of breaker positions for the valves listed in SR 3.5.2.1. This new SR is in lieu of the ISTS SR 3.5.2.1 requirement to verify breaker position every 12 hours (see discussion above). These deviations are consistent with the approved GITS.
X	44	PI proposes to extend its refueling outages up to 24 month intervals. Thus CTS SRs which are required to be performed each refueling outage or every 18 months are proposed to be performed at 24 month intervals. Likewise, ISTS SRs which are required to be performed at 18 month intervals are proposed to be performed every 24 months. This change is made to accommodate the PI proposal to extend refueling cycles to 24 months.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	45	The wording for this SR was revised to eliminate the term "position stop" since this is not a term which is familiar to the plant operators. The list of unit valve numbers is taken from the CTS.
	46	Not used.
TA	47	This change incorporates approved TSTF-90, Rev.1.
CL	48	At PI, both SI pumps have to be made incapable of automatically injecting into the RCS when any RCS cold leg temperature drops below the SI pump disable temperature specified in the COLR. The SI pump disable temperature as of the date of this ITS LAR submittal is 218°F. Therefore, when the RCS temperature drops to 218 F, a complete train of ECCS can not be OPERABLE. Accordingly, the Applicability for Specification 3.5.3 and the Bases have been modified to only require an ECCS train OPERABLE when the RCS temperature is greater than the SI pump disable temperature. Operation with the RCS temperature less than or equal to the SI pump disable temperature is addressed by Specification 3.4.6. An OPERABLE ECCS train is not required because the RHR subsystem is OPERABLE, pressure is low enough for RHR injection, and the SI pumps remain manually available for injection into the RCS.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	49	At PI the high head injection system is the charging system which does not perform an ECCS function. The charging system is used to control RCS inventory and chemistry conditions and provide reactor coolant pump seal injection. The pumps are not credited in any USAR Chapter 14 analyses with respect to an ECCS function. The SI system will inject into the RCS following an accident after RCS pressure drops below the SI pumps' discharge pressure.
	50	Not used.
CL	51	The PI RWST is located within the Auxiliary Building and is not subject to temperature extremes which would require an action statement and surveillance requirement; thus it is not the subject of TS in the PI CTS. Accordingly, the second part of Condition A for this LCO and SR 3.5.4.1 were not included. The Bases were also modified to account for these changes.
CL	52	In addition to boron concentration specifications, PI CTS require RWST water volume to be within limits; thus, this condition is included as a Specification Condition.
CL	53	The bracketed volume in gallons has been replaced by the PI specific gallons which is the CTS requirement. The percent (%) level is included as a parenthetical requirement to maintain consistency with the indication available to the control room operators.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	54	The Bases for this Specification states, "This LCO is applicable only to those units that utilize the centrifugal charging pumps for safety injection (SI)." PI does not have centrifugal charging pumps and does not use its positive displacement charging pumps as part of the SI system. Thus this Specification is not applicable to PI and is not included in the PI ITS.
CL	55	PI currently does not have any boron addition TS other than the RWST. The PI design does not include use of a BIT as defined in Specification 3.5.6. For these reasons, Specification 3.5.6 is not included in the PI ITS.
	56	Not used.
	57	Not used.
	58	Not used.
	59	Not used.
	60	Not used.

Difference Category	Difference Number 3.5-	Justification for Differences
PA	61	During the development of ITS, certain wording preferences, English conventions, reformatting, renumbering, providing additional descriptive information as related to PI, or editorial rewording consistent with plant specific nomenclature, system names, design, or current licensing bases were adopted. As a result of these changes, the TS should be more readily readable by, and therefore understandable to plant operators and other users. During this process, no technical changes were made to the TS unless they were identified and justified.
CL	62	The PI units are two loop Westinghouse reactors and NUREG-1431 was written for hypothetical four loop reactors. Therefore, these Bases have been revised to accurately describe the accidents and accident phases for which PI credits accumulators.
PA	63	The description of blowdown phase events has been removed from the refill phase and included in the blowdown discussion where it is more appropriate.
	64	Not used.
	65	Not used.
CL	66	Specific details from PI CTS have been relocated to this Bases Background.

Difference Category	Difference Number 3.5-	Justification for Differences
TA	67	This change incorporates approved TSTF-316, Rev. 1.
	68	Not used.
	69	Not used.
	70	Not used.
CL	71	The discussion of ECCS initiation delay has been generalized. Further details can be found in the PI USAR or references. By removing the details from the Bases, changes to these numbers will not require a Bases change.
CL	72	PI does not have centrifugal charging pumps and does not use the charging pumps as part of the ECCS; thus the discussion has been revised to accurately describe the PI design.
CL	73	The discussion of 10 CFR 50.46 ECCS performance criteria have been revised to be the same as the PI USAR presentation of these criteria. Identical presentations in the Bases and USAR will eliminate confusion.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	74	NUREG-1431 discussion is based on a hypothetical four loop plant. PI is a two loop plant with upper plenum injection and the LOCA scenario is based on WCOBRA/TRAC analyses. Thus this discussion has been revised to reflect the PI specific design and analyses.
	75	Not used.
PA	76	The discussion of instrument uncertainty is not applicable to PI and is not included. Other accumulator instrument uncertainties are not discussed in the Bases for the accumulators; thus this discussion is not necessary.
CL	77	This discussion has been revised to reflect the PI design and analyses. Maximum accumulator boron concentration is not used in boron buildup analyses since this would be less conservative for PI as discussed in the Bases.
	78	Not used.
	79	Not used.
	80	Not used.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	81	The accumulator pressure used in the analyses varies depending on the accident under consideration; thus reference is made to the USAR.
CL	82	The Bases discussion has been modified to describe why low boron concentration will not significantly impact core subcriticality at PI. Also, PI specific results for MSLB are included and "for the majority of plants" is deleted. Since a maximum accumulator boron concentration is not included, the Required Action will not affect the "minimum boron precipitation time" and thus this clause is not included.
	83	Not used.
CL	84	Clarification has been included that only motor operated valves are require position verification every 12 hours. Also, it is explicitly allowed to use control board indication for valve position verification. Clarification is also provided that a valve that is not fully open will also result in not meeting the analyses.
	85	Not used.
PA	86	Guidance is provided that control board indication is an acceptable means of performing these SRs.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	87	The rod ejection accident and loss of feedwater accident are not included since the PI analyses do not consider these events with ECCS.
CL	88	PI only has two phases of ECCS operation: injection and recirculation. Injection may be into the RCS cold legs or reactor vessel upper plenum. Thus the Bases discussion has been revised to accurately describe the PI design and analyses.
	89	Not used.
	90	Not used.
PA	91	Interconnection of subsystems would only be implemented as necessitated by system conditions; therefore, clarification is provided.
	92	Not used.
CL	93	PI does not have a boron injection tank (BIT), therefore, this discussion is not included.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	94	Discussion of the standard NUREG-1431 plant design features have been replaced by discussion of PI specific design features.
	95	Not used.
CL	96	PI does not have centrifugal charging pumps and does not take credit for the charging pumps during a LOCA, which does not depressurize the RCS; therefore this discussion has been replaced with discussion of the steam generators which provide cooling for these LOCAs.
CL	97	PI does not have capability to automatically transfer RHR suction from the RWST to containment sump B; therefore "manually" is included and "automatic" is deleted as applicable.
	98	Not used.
	99	Not used.
	100	Not used.

Difference Category	Difference Number 3.5-	Justification for Differences
PA	101	"negative" is not included since it is redundant within the sentence and not needed.
PA	102	As discussed in Package 3.4, the PI ITS changed the title of Specification 3.4.12 and introduced a new Specification 3.4.13. These changes have been incorporated into these Bases.
CL	103	Reference to the General Design Criteria (GDC) contained in 10CFR50 Appendix A is replaced by reference to the Atomic Energy Commission (AEC) proposed GDC which is the PI licensing basis. PI was licensed to the proposed AEC GDC which pre-dated the 10CFR50 App A GDC. Some text changes may have been made in some locations to conform to the actual requirements of the AEC GDC.
	104	Not used.
	105	Not used.
CL	106	Clarification is provided that the RHR pump is transferred upon receipt of an alarm. PI does not have automatic transfer and therefore the RHR pump is transferred when the operators observe the low-low level alarm.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	107	CTS details on control of valves which could affect ECCS performance have been relocated to the Bases.
PA	108	Description of PI blocking and locking conventions is provided to assure these terms are understood as used in the ITS.
	109	Not used.
	110	Not used.
PA	111	Discussion is included for specific core cooling requirements during MODE 4, thus the discussion of "Below MODE 3 . . ." is not included.
PA	112	Discussion of both ECCS trains inoperable from a single component failure is not included since it is not required for operator understanding of the Action Statement requirements.
CL	113	Guidance is provided that control board indication is an acceptable means of performing these SRs.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	114	CTS details on control of valves which could affect ECCS performance have been relocated to the Bases. Reference to 3.5.2.3 is included since it contains the related requires for verification of breaker position.
	115	Not used.
PA	116	Description of PI use of the term "seal" is provided to assure this term is understood as used in the ITS.
CL	117	Changed "greater than or equal to" to "within" since the flow could be too high and not meet test requirements.
	118	Not used.
	119	Not used.
	120	Not used.
CL	121	Test condition and acceptance criteria from CTS 4.5.A.1 have been relocated to the Bases.
CL	122	CTS Bases discussion replaces NUREG-1431 discussion which does not apply to PI.

Difference Category	Difference Number 3.5-	Justification for Differences
PA	123	Clarification is provided that the containment sump suction requiring inspection is the inlet to the RHR System. Discussion of the need to perform this SR during outages is not included since it is not accurate for PI.
CL	124	For completeness, containment sump B is included as part of the ECCS flow path.
	125	Not used.
CL	126	NUREG-1431 discussion of Applicable Safety Analyses has been replaced with statements which are appropriate for PI.
CL	127	PI specific justification is provided for time delays in aligning RHR for ECCS operation.
	128	Not used.
	129	Not used.
	130	Not used.

Difference Category	Difference Number 3.5-	Justification for Differences
CL	131	The NUREG-1431 discussion of the VCT, RWST interlock valves and centrifugal changing pumps is not applicable to PI and therefore is not included.
CL	132	Since PI does not operate the containment spray pumps in the recirculation mode, they are not included in this discussion. For completeness, the SI pump and Auxiliary Building were included in the discussion of releases from the RWST.
CL	133	At PI the correct basis for RWST and containment sump water levels is RHR pump NPSH; thus the Bases have been modified.
CL	134	The NUREG-1431 discussion of RWST maximum boron has been replaced with appropriate statements for PI.
	135	Not used.
CL	136	The NUREG-1431 discussion of maximum boron concentration has been modified to be accurate for PI.
CL	137	The NUREG-1431 discussion of MSLB analysis delays for VCT and RWST valve interlocks does not apply to PI and therefore is not included.
	138	Not used.

Difference Category	Difference Number 3.5-	Justification for Differences
	139	Not used.
	140	Not used.
CL	141	PI does not have an alarm to alert operators to RWST leakage. However this tank is located in the auxiliary building where operators perform inspections each shift and would observe RWST leakage if it were to occur.

PACKAGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

PART G

NO SIGNIFICANT HAZARDS DETERMINATION (NSHD)

and

ENVIRONMENTAL ASSESSMENT

for

CHANGES TO PRAIRIE ISLAND CURRENT TECHNICAL SPECIFICATIONS

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

Part G

PACKAGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

NO SIGNIFICANT HAZARDS DETERMINATION AND ENVIRONMENTAL ASSESSMENT

NO SIGNIFICANT HAZARDS DETERMINATION

The proposed changes to the Operating License have been evaluated to determine whether they constitute a significant hazards consideration as required by 10CFR Part 50, Section 50.91 using the standards provided in Section 50.92.

For ease of review, the changes are evaluated in groupings according to the type of change involved. A single generic evaluation may suffice for some of the changes while others may require specific evaluation in which case the appropriate reference change numbers are provided.

A - Administrative (GENERIC NSHD)
(A3.5-01, A3.5-04, A3.5-07, A3.5-15, A3.5-20, A3.5-22, A3.5-301, A3.5-302, A3.5-303, A3.5-304, A3.5-306, A3.5-307)

Most administrative changes have not been marked-up in the Current Technical Specifications, and may not be specifically referenced to a discussion of change. This No Significant Hazards Determination (NSHD) may be referenced in a discussion of change by the prefix "A" if the change is not obviously an administrative change and requires an explanation.

These proposed changes are editorial in nature. They involve reformatting, renaming, renumbering, or rewording of existing Technical Specifications to provide consistency

Administrative (continued)

with NUREG-1431 or conformance with the Writer's Guide, or change of current plant terminology to conform to NUREG-1431. Some administrative changes involve relocation of requirements within the Technical Specifications without affecting their technical content. Clarifications within the new Prairie Island Improved Technical Specifications which do not impose new requirements on plant operation are also considered administrative.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed conversion of Prairie Island Current Technical Specifications to conform to NUREG-1431 involves reformatting, rewording, changes in terminology and relocating requirements. These changes are simply editorial, or do not involve technical changes and thus they do not impact any initiators of previously analyzed events or assumed mitigation of accident or transient events. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   These proposed administrative changes do not involve physical modification of the plant, no new or different type of equipment will be installed or removed associated with these administrative changes, nor will there be changes in parameters governing normal plant operation. The proposed administrative changes do not impose new or different requirements on plant operation. Therefore, these administrative changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   These proposed administrative changes do not impact any safety analysis assumptions. Therefore, these changes do not involve a reduction in the plant margin of safety.

M - More restrictive (GENERIC NSHD)
(M3.5-02, M3.5-03, M3.5-05, M3.5-06, M3.5-08, M3.5-10, M3.5-18)

This proposed Technical Specifications revision involves modifying the Current Technical Specifications to impose more stringent requirements upon plant operations to achieve consistency with the guidance of NUREG-1431, correct discrepancies or remove ambiguities from the specifications. These more restrictive Technical Specifications have been evaluated against the plant design, safety analyses, and other Technical Specifications requirements to ensure the plant will continue to operate safely with these more stringent specifications.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes provide more stringent requirements for operation of the plant. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event.

   These more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The proposed changes do not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed, nor do they change the methods governing normal plant operation.

   These more stringent requirements do impose different operating restrictions. However, these operating restrictions are consistent with the boundaries established by the assumptions made in the plant safety analyses and licensing bases. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

M - More restrictive (continued)

3. The proposed amendment will not involve a significant reduction in the margin of safety.

The imposition of more stringent requirements on plant operation either has no impact on the plant margin of safety or increases the margin of safety. Each change in this category is by definition providing additional restrictions to enhance plant safety by:

a) increasing the analytical or safety limit;
b) increasing the scope of the specifications to include additional plant equipment;
c) adding requirements to current specifications;
d) increasing the applicability of the specification;
e) providing additional actions;
f) decreasing restoration times;
g) imposing new surveillances; or
h) decreasing surveillance intervals.

These changes maintain requirements within the plant safety analyses and licensing bases. Therefore, these changes do not involve a significant reduction in a margin of safety.

R - Relocation (GENERIC NSHD)
(None in this package)

This License Amendment Request (LAR) proposes to relocate requirements contained in the Current Technical Specifications out of the Technical Specifications into licensee controlled programs. These requirements are relocated because they 1) do not meet the Technical Specifications selection criteria defined in 10 CFR 50.36; or 2) are mandated by current Nuclear Regulatory Commission (NRC) regulations and are therefore unnecessary in the Technical Specifications.

In the NRC Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors (dated 7/16/93), the NRC stated:

> . . . since 1969, there has been a trend towards including in Technical Specifications not only those requirements derived from the analyses and evaluations included in the safety analysis report but also essentially all other Commission requirements governing the operation of nuclear power reactors. . . This has contributed to the volume of Technical Specifications and to the several-fold increase, since 1969, in the number of license amendment applications to effect changes to the Technical Specifications. It has diverted both staff and licensee attention from the more important requirements in these documents to the extent that it has resulted in an adverse but unquantifiable impact on safety.

Thus, relocation of unnecessary requirements from the Current Technical Specifications should result in an overall improvement in plant safety through more focused attention to the requirements that are most important to plant safety.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   These proposed changes relocate requirements for structures, systems, components or variables which did not meet the criteria for inclusion in the improved Technical Specifications, or which duplicate regulatory requirements. The affected structures, systems, components or variables are not assumed to be initiators of analyzed events and are not assumed to mitigate accident or transient events.

Relocation (continued)

These relocated operability requirements will continue to be maintained pursuant to 10 CFR 50.59, other regulatory requirements (as applicable for the document to which the requirement is relocated), or the Administrative Controls section of these proposed improved Technical Specifications.

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

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   These proposed changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed changes do not impose any different requirements and adequate control of existing requirements will be maintained. Thus, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   These proposed changes will not reduce the margin of safety because they do not impact any safety analysis assumptions. In addition, the relocated requirements for the affected structure, system, component or variables are the same as the current Technical Specifications. Since future changes to these requirements will be evaluated per the requirements of 10 CFR 50.59, other regulatory requirements (as applicable for the document to which the requirement is relocated), or the Administrative Control section of the Improved Technical Specifications, proper controls are in place to maintain the plant margin of safety. Therefore, these changes do not involve a significant reduction in the margin of safety.

LR - Less restrictive, Relocated details (GENERIC NSHD)
(LR3.5-11, LR3.5-12, LR3.5-14, LR3.5-21, LR3.5-23, LR3.5-24, LR3.5-26)

Some information in the Prairie Island Current Technical Specifications that is descriptive in nature regarding the equipment, system(s), actions or surveillances identified by the specification has been removed from the proposed specification and relocated to the proposed Bases, Updated Safety Analysis Report or licensee controlled procedures. The relocation of this descriptive information to the Bases of the Improved Technical Specifications, Updated Safety Analysis Report or licensee controlled procedures is acceptable because these documents will be controlled by the Improved Technical Specifications required programs, procedures or 10CFR50.59. Therefore, the descriptive information that has been moved continues to be maintained in an appropriately controlled manner.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes relocate detailed, descriptive requirements from the Technical Specifications to the Bases, Updated Safety Analysis Report or licensee controlled procedures. These documents containing the relocated requirements will be maintained under the provisions of 10CFR50.59, a program or procedure based on 10CFR50.59 evaluation of changes, or NRC approved methodologies. Since these documents to which the Technical Specifications requirements have been relocated are evaluated under 10CFR50.59 or its guidance, or in accordance with NRC approved methodologies, no increase in the probability or consequences of an accident previously evaluate will be allowed without prior NRC approval. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   These proposed changes do not necessitate physical alteration of the plant, that is, no new or different type of equipment will be installed, or change parameters governing normal plant operation. The proposed changes will not impose any different requirements and adequate control of the information will be maintained. Thus, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

LR - Less restrictive, Relocated details (continued)

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The proposed changes will not reduce a margin of safety because it has no impact on any safety analysis assumptions. In addition, the requirements to be transposed from the Technical Specifications to the Bases, Updated Safety Analysis Report or licensee controlled procedures are the same as the existing Technical Specifications. Since future changes to these requirements will be evaluated under 10CFR50.59 or its guidance, or in accordance with NRC approved methodologies, no reduction in a margin of safety will be allowed without prior NRC approval. Therefore, these changes do not involve a significant reduction in a margin of safety.

L - Less restrictive, Specific

Each CTS change which is designated as Less (L prefix) restrictive on plant operations is provided with a specific NSHD.

Specific NSHD for Change L3.5-09

CTS require two trains of ECCS OPERABLE for MODE 4. For consistency with NUREG-1431, the PI ITS requires one train of ECCS OPERABLE in MODE 4 when the RCS temperature is above the SI disable temperature.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   ECCS in MODE 4 is not the subject of any safety analyses at PI; therefore, this change does not involve a significant increase in the probability or consequences of a previously evaluated accident.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The ECCS system is not an accident initiator; thus, changing ECCS equipment operability in MODE 4 does not create the possibility of a new or different kind of accident.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   In MODE 4 the RCS temperature is lower, the probability of occurrence of a Design Basis Accident is reduced, and due to lower energy content of the core the operators have sufficient time for manual actuation of the ECCS to mitigate

Specific NSHD for Change L3.5-09 (continued)

the consequences of a DBA; thus, this change does not involve a significant reduction in the margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.5-13

This change will require a unit to be placed in MODE 4 within 6 hours due to ECCS equipment inoperability rather than the CTS requirements to place it in MODE 5 within 30 hours.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   When the unit has been placed in MODE 4, the ECCS is no longer the subject of any applicable safety analyses; thus, this change does not involve a significant increase in the probability or consequences of a previously evaluated accident. In accordance with new Specification 3.5.3, only one train of ECCS is required OPERABLE in MODE 4; thus, in this mode the Specification LCO is met.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The ECCS system is not an accident initiator; thus, maintaining the unit in MODE 4 with one ECCS train inoperable does not create the possibility of a new or different kind of accident. In accordance with new Specification 3.5.3, only one train of ECCS is required OPERABLE in MODE 4; thus, in this mode the Specification LCO is met.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   In MODE 4 the probability of occurrence of a transient or accident is not significantly higher than MODE 5. Furthermore, the energy in the core in MODE 4 is not significantly higher than in MODE 5 which means the operators have almost as much time for manual actuation of the ECCS to mitigate the consequences of a transient or accident. Thus, this change does not involve a significant reduction in the margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.5-16

This change establishes a specific condition of inoperability that will allow the boron concentration in one accumulator to be outside of specification limits up to 72 hours. CTS do not distinguish between different types of inoperability and limits inoperability to 1 hour. This change is acceptable because the boron concentration in the accumulators is not specifically evaluated in the injection phase of the LOCA analysis. Although the boron concentration of the accumulators is considered in the recirculation phase, the impact of a single accumulator's borated water volume is not significant when compared to the total borated water volume present during the recirculation phase. This change is consistent with the guidance of NUREG-1431.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The accumulators are not assumed to be an initiator of any analyzed event. The role of the accumulators is to mitigate and thereby limit the consequences of accidents. With the proposed change in TS, the accumulators will remain capable of mitigating DBA as described in the USAR and the results of the analyses in the USAR remain bounding. This proposed change does not impose any new safety analysis limits or alter the plant's ability to detect and mitigate accidents. Therefore, this change does not involve a significant increase in the probability or consequences of an accident.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change does not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed. This proposed change does not introduce any new mode of plant operation or change the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Specific NSHD for Change L3.5-16 (continued)

3. The proposed amendment will not involve a significant reduction in the margin of safety.

This proposed accumulator specification is based on the importance of the water volume and associated boron content of a single accumulator in mitigating the consequences of a postulated accident. With this change, the accumulators will function when necessary within the bounds of the applicable safety analyses. In addition, increasing the allowed outage time from 1 hour to 72 hours reduces the potential for requiring a unit shutdown and the concomitant potential for plant transient. Thus any reduction in the margin of safety is insignificant and offset by the reduction in potential plant transients. Overall this change does not result in a significant reduction in the margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.5-17

This change will allow combinations of ECCS components or subsystems to be inoperable provided at least 100% flow equivalent to a single ECCS trains remains OPERABLE.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   This change does not involve any physical plant changes. The ECCS components addressed by this TS are not assumed to be initiators of any analyzed accident. Therefore, this change does not involve a significant increase in the probability of an accident previously evaluated. The change would allow combinations of ECCS components or subsystems to be inoperable for up to 72 hours providing the remaining operable ECCS components can provide the flow equivalent to a single operable train which will ensure 100% of the flow assumed in the safety analyses. Since the ability of the ECCS to perform its safety function is not lost or degraded, this change does not involve a significant increase in the consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   The proposed change does not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed. The proposed change will only more accurately define the minimum equipment required to be operable to perform the ECCS function while in this Condition. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Specific NSHD for Change L3.5-17 (continued)

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The proposed change, which allows operation to continue for up to 72 hours with components inoperable in both ECCS trains, is acceptable based on the remaining ECCS components providing 100% of the required ECCS flow, the small probability of an accident occurring in 72 hours that would require ECCS, and the reduced potential for a unit transient resulting from the shutdown required by current TS for a second inoperable ECCS train. The proposed allowed outage time of 72 hours for this condition is consistent with the time currently allowed for one train of ECCS to be inoperable. Since 100% flow equivalent to a single train remains operable, the margin of safety is not significantly reduced. The plant risk of a small probability accident requiring ECCS during this time is insignificant and offset by the benefit gained through avoiding unnecessary plant transients. Therefore, this change does not involve a significant reduction in margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.5-19

This change will add a new Action Statement which allows 8 hours to restore RWST boron concentration to within its limits rather than shut down the unit under the requirements of Specification 3.0.C (CTS equivalent of proposed ITS 3.0.3).

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   This change does not involve any physical changes to the plant or operating procedure changes. The RWST is not assumed to be an initiator of any analyzed accident. Thus, changing the Completion Time to restore the RWST to OPERABLE status does not affect the probability of an accident. Since the RWST is very large, any violation of the boron limits would likely result from minor deviations from the specified requirements. The contents of the tank are still available for injection and the accident analyses contain calculational margins; thus, the consequences of a previously analyzed accident are not significantly increased.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change does not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed. The proposed change will only provide an additional 7 hours Completion Time to restore the RWST to OPERABLE status before shutting down. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   The proposed additional 7 hours allowed Completion Time to restore the RWST to OPERABLE status prior to requiring unit shutdown is based on the fact that the contents of the tank remain available for injection and that a violation of

Specific NSHD for Change L3.5-19 (continued)

these limits would likely result from minor deviations from the specified concentration. Also, the probability of an event requiring the RWST as a source of water during this time period is small. Allowing 8 hours to return the RWST to OPERABLE will also minimize the potential for plant transients that can occur during the shutdown that might otherwise be required by the previous 1 hour Completion Time. Therefore, the reduction in the margin of safety due to this change is insignificant and is offset by avoiding an unnecessary plant transient.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This change is consistent with the guidance of NUREG-1431.

Specific NSHD for Change L3.5-25

This change will extend the allowed surveillance interval from 18 months to 24 months for verification of ECCS throttle valve positions. CTS require SR to be performed each outage or at 18 month intervals and allow this to be extended to 24 months under the provisions of CTS 4.0.A. CTS also specify that intervals between tests scheduled for refueling shutdowns shall not exceed two years and proposed SR 3.0.2 will retain this restriction.

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   These valves are not initiator for any previously analyzed accidents; therefore, this change does not increase the probability of any previously analyzed accident.

   Changing surveillance intervals does not change any plant conditions which would contribute to accident releases. There are no time dependent degradation mechanisms which would affect the position of manual throttle valves and these valves are not readily accessible for accidental repositioning. Thus this change does not involve a significant increase in the consequences of a previously analyzed accident.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously analyzed.

   This proposed change may increase the interval in which the ECCS throttle valves positions are verified. However, it does not involve a physical alteration of the plant, that is, no new or different type of equipment will be installed. Thus, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Specific NSHD for Change L3.5-25 (continued)

3. The proposed amendment will not involve a significant reduction in the margin of safety.

   These valves have their handwheels removed and are located inside containment; therefore, it is very unlikely that the position will be inadvertently changed between surveillances. Furthermore, there are no degradation mechanisms which would result in the position changing. Thus, extending the surveillance interval does not involve a significant reduction in the margin of safety.

Therefore it is concluded this proposed change does not involve a significant hazards consideration. This proposed change is consistent with the guidance of NRC issued Generic Letter 91-04.

ENVIRONMENTAL ASSESSMENT

The Nuclear Management Company has evaluated the proposed changes and determined that:

1. The changes do not involve a significant hazards consideration, or

2. The changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or

3. The changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR Part 51 Section 51.22(c)(9). Therefore, pursuant to 10 CFR Part 51 Section 51.22(b), an environmental assessment of the proposed changes is not required.

PACKAGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

CROSS - REFERENCE

CURRENT TECHNICAL SPECIFICATIONS

TO

IMPROVED TECHNICAL SPECIFICATIONS

List of Section Cross - References

3.3
4.5
Table 4.1-2B

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
CTS Section 3.3				
3.3.A.1.a		LCO	3.5.4	
New		SR	3.5.4.1	
3.3.A.1.a		SR	3.5.4.1	
3.3.A.1.a		SR	3.5.4.2	
3.3.A.1.b		LCO	3.5.1	
3.3.A.1.b.(1)		SR	3.5.1.1	
New		SR	3.5.1.1	
New		SR	3.5.1.2	
3.3.A.1.b.(2)		SR	3.5.1.2	
3.3.A.1.b.(3)		SR	3.5.1.4	
3.3.A.1.b.(4)		SR	3.5.1.3	
New		SR	3.5.1.3	
New		SR	3.5.1.5	
3.3.A.1.c		LCO	3.5.2	
3.3.A.1.d		LCO	3.5.2	
3.3.A.1.e		LCO	3.5.2	
New		LCO	3.5.3	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
New		SR	3.5.2.1	
New		SR	3.5.2.2	
New		SR	3.5.2.3	
New		SR	3.5.2.8	
New		SR	3.5.3.1	
3.3.A.1.f		LCO	3.5.3	
3.3.A.1.f		(Partial)	Relocated - Bases	
3.3.A.1.g (1)		SR	3.5.2.1	
3.3.A.1.g (1)		SR	3.5.2.3	
3.3.A.1.g (1)		(Partial)	Relocated - TRM	
3.3.A.1.g (2)		SR	3.5.2.1	
3.3.A.1.g (2)		SR	3.5.2.3	
3.3.A.1.g (2)		(Partial)	Relocated - TRM	
3.3.A.1.g (3)			Deleted	
3.3.A.1.g (4)			Relocated - TRM	
3.3.A.2		LCO	3.5.2	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
3.3.A.2.a			Relocated - Bases	
3.3.A.2.b			Relocated - Bases	
3.3.A.2.c			Relocated - Bases	
3.3.A.2.d			Relocated - Bases	
3.3.A.2.e		LCO	3.5.1	
New		LCO	3.5.1	
3.3.A.2.f		LCO	3.5.2	
3.3.A.2.g			Relocated - TRM	
New		LCO	3.5.4	
3.3.A.3		LCO	3.4.12	
3.3.A.3		LCO	3.4.13	
3.3.A.4		LCO	3.4.13	
3.3.A.5		LCO	3.4.12	
3.3.A.5		LCO	3.4.13	
3.3.B.1.a		LCO	3.6.5	
3.3.B.1.b		LCO	3.6.5	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
3.3.B.1.c		LCO	3.6.6	
3.3.B.1.c		(Partial)	Relocated - Bases	
3.3.B.1.d			Relocated - Bases	
3.3.B.1.e			Relocated - Bases	
New		LCO	3.6.5	
New		LCO	3.6.6	
3.3.B.2.a		LCO	3.6.5	
3.3.B.2.b		LCO	3.6.5	
New		SR	3.6.5.1	
3.3.B.2.c		LCO	3.6.6	
New		SR	3.6.6.1	
New		SR	3.6.6.2	
3.3.C.1.a		LCO	3.7.7	
3.3.C.1.a.1		LCO	3.7.7	
3.3.C.1.a.2			Relocated - Bases	
3.3.C.1.b		LCO	3.7.7	
3.3.C.1.b.1		LCO	3.7.7	
3.3.C.1.b.2			Relocated - Bases	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
New		SR	3.7.7.1	
3.3.C.2			Relocated - Bases	
3.3.D.1		LCO	3.7.8	
3.3.D.1.a			Relocated - Bases	
3.3.D.1.b			Relocated - Bases	
3.3.D.1.c			Relocated - Bases	
3.3.D.1.d		LCO	3.7.8	
New		LCO	3.7.8	
New		SR	3.7.8.3	
3.3.D.2		LCO	3.7.9	
3.3.D.2		LCO	3.7.8	
3.3.D.2.a		LCO	3.7.8	
3.3.D.2.a.(1)			Relocated - SFDP	
3.3.D.2.a.(2)			Relocated - SFDP	
3.3.D.2.a(3)		LCO	3.7.8	
3.3.D.2.b		LCO	3.7.8	
3.3.D.2.b(1)			Relocated - SFDP	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
3.3.D.2.b(2)		LCO	3.7.8	
3.3.D.2.b(2)		(partial)	Relocated - SFDP	
New		SR	3.7.8.1	
3.3.D.2.c		LCO	3.7.9	
3.3.D.2.d		LCO	3.7.9	
3.3.D.2.e		LCO	3.7.9	
New		SR	3.7.9.1	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
CTS Section 4.5				
4.5.A.1.a		(Partial)	Relocated - Bases	
4.5.A.1.a		SR	3.5.2.6	
4.5.A.1.b			Relocated - Bases	
4.5.A.2.a		SR	3.6.5.6	
4.5.A.2.a		(Partial)	Relocated - Bases	
4.5.A.2.b		SR	3.6.5.8	
4.5.A.2.c			Relocated - Bases	
4.5.A.3		SR	3.6.5.3	
4.5.A.3		(Partial)	Relocated - Bases	
4.5.A.4.a		SR	3.7.7.2	
4.5.A.4.a		SR	3.7.7.3	
4.5.A.4.b			Relocated - Bases	
4.5.A.5.a		SR	3.7.8.5	
4.5.A.5.a		SR	3.7.8.6	
4.5.A.5.a		(Partial)	Relocated - Bases	
4.5.A.5.b			Relocated - TRM	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
4.5.B.1.a		(Partial)	Relocated - IST	
4.5.B.1.a		SR	3.5.2.4	
4.5.B.1.a		SR	3.6.5.4	
4.5.B.1.b		SR	3.7.8.2	
4.5.B.1.b		(Partial)	Relocated - Bases	
4.5.B.1.c		SR	3.7.8.4	
4.5.B.1.c		(Partial)	Relocated - Bases	
4.5.B.2		SR	3.6.5.2	
4.5.B.2		(Partial)	Relocated - Bases	
4.5.B.3.a			Relocated - IST	
4.5.B.3.b			Relocated - IST	
4.5.B.3.c			Deleted by Boric Acid LAR	
4.5.B.3.d			Relocated - IST	
4.5.B.3.e		SR	3.7.8.5	
4.5.B.3.e		(Partial)	Relocated - Bases	
4.5.B.3.f		SR	3.5.2.5	
4.5.B.3.f		SR	3.6.5.5	
4.5.B.3.f		SR	3.6.6.4	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
4.5.B.3.f		SR	3.7.7.2	
4.5.B.3.f		SR	3.7.8.5	
4.5.B.3.g.1			Relocated - TRM	
4.5.B.3.g.2			Relocated - TRM	
4.5.B.3.g.3		SR	3.5.2.7	
4.5.B.3.h			Relocated - TRM	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
CTS Section Table				
Table 1-1		TABLE	Table 1.1-1	
Table 1-1	Note *	LCO	3.9.1	
New		LCO	3.9.1	
Table 1-1	Note *	(Partial)	Relocated - COLR	
Table 1-1	Note **		Deleted	
Table 3.5-1	9	TABLE	3.3.5-1	Note c
Table 3.5-1	1	TABLE	3.3.2-1	1c
Table 3.5-1	2a	TABLE	3.3.2-1	2c
Table 3.5-1	2b	TABLE	3.3.2-1	4b
Table 3.5-1	3	TABLE	3.3.2-1	1d
Table 3.5-1	4	TABLE	3.3.2-1	1e
Table 3.5-1	4	TABLE	3.3.2-1	Note b
Table 3.5-1	5	TABLE	3.3.2-1	4c
Table 3.5-1	6	TABLE	3.3.2-1	4d
Table 3.5-1	7	SR	3.6.8.1	
Table 3.5-1	8		Relocated - TRM	
Table 3.5-1	9	TABLE	3.3.5-1	3

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
Table 3.5-1	10	SR	3.3.4.2	
Table 3.5-2A	1	TABLE	3.3.1-1	1
Table 3.5-2A	2a	TABLE	3.3.1-1	2a
Table 3.5-2A	2b	TABLE	3.3.1-1	2b
Table 3.5-2A	3	TABLE	3.3.1-1	3a
Table 3.5-2A	4	TABLE	3.3.1-1	3b
Table 3.5-2A	5	TABLE	3.3.1-1	4
Table 3.5-2A	6	TABLE	3.3.1-1	5
Table 3.5-2A	7	TABLE	3.3.1-1	6
Table 3.5-2A	8	TABLE	3.3.1-1	7
Table 3.5-2A	9	TABLE	3.3.1-1	8a
Table 3.5-2A	10	TABLE	3.3.1-1	8b
Table 3.5-2A	11	TABLE	3.3.1-1	9
Table 3.5-2A	12	TABLE	3.3.1-1	10
Table 3.5-2A	13	TABLE	3.3.1-1	14
Table 3.5-2A	14	TABLE	3.3.1-1	13
Table 3.5-2A	15	TABLE	3.3.1-1	12
Table 3.5-2A	16a	TABLE	3.3.1-1	11a
Table 3.5-2A	16b	TABLE	3.3.1-1	11b

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
Table 3.5-2A	17	TABLE	3.3.1-1	15
Table 3.5-2A	18	TABLE	3.3.1-1	19
Table 3.5-2A	19	TABLE	3.3.1-1	17
Table 3.5-2A	20	TABLE	3.3.1-1	17
Table 3.5-2A	New Func	TABLE	3.3.1-1	16
Table 3.5-2A	New Func	TABLE	3.3.1-1	18
Table 3.5-2A	Act 1	LCO	3.3.1 B	
Table 3.5-2A	Action 1	LCO	3.3.1 M	
Table 3.5-2A	Action 2	LCO	3.3.1 D	
Table 3.5-2A	Action 2	LCO	3.3.1 E	
Table 3.5-2A	Act 2	SR	3.2.4.2	
Table 3.5-2A	Act 2c	SR	3.2.4.2	
Table 3.5-2A	Act 3	LCO	3.3.1 F	
Table 3.5-2A	New Action	LCO	3.3.1 G	
Table 3.5-2A	Action 4	LCO	3.3.1 H	
Table 3.5-2A	New Action	LCO	3.3.1 I	
Table 3.5-2A	Action 5	LCO	3.3.1 J	
Table 3.5-2A	Action 6	LCO	3.3.1 E	
Table 3.5-2A	Action 6	LCO	3.3.1 K	

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
Table 3.5-2A	Action 6	LCO	3.3.1 N	
Table 3.5-2A	Action 7	LCO	3.3.1 O	
Table 3.5-2A	Act 8	LCO	3.3.1 C	
Table 3.5-2A	Action 9a	LCO	3.3.1 S	
Table 3.5-2A	Action 9a	LCO	3.3.1.P	
Table 3.5-2A	Action 9b	LCO	3.3.1 P	
Table 3.5-2A	Action 10	LCO	3.3.1 C	
Table 3.5-2A	Act 10	LCO	3.3.1 P	
Table 3.5-2A	Action11	LCO	3.3.1 L	
Table 3.5-2A	New Action	LCO	3.3.1 Q	
Table 3.5-2A	New Action	LCO	3.3.1 R	
Table 3.5-2A	New Action	LCO	3.3.1 S	
Table 3.5-2A	Note a	TABLE	3.3.1-1	Note a
Table 3.5-2A	Note b	TABLE	3.3.1-1	Note b
Table 3.5-2A	Note c	TABLE	3.3.1-1	Note d
Table 3.5-2A	Note d	TABLE	3.3.1-1	Note i
Table 3.5-2A	New Note	TABLE	3.3.1-1	Note e
Table 3.5-2A	New Note	TABLE	3.3.1-1	Note f
Table 3.5-2A	New Note	TABLE	3.3.1-1	Note g

Current Technical Specification Cross-Reference

CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
Table 3.5-2A	New Note	TABLE	3.3.1-1	Note h
Table 3.5-2A	New Note	TABLE	3.3.1-1	Note j
Table 3.5-2B	1a	TABLE	3.3.2-1	1a
Table 3.5-2B	1b	TABLE	3.3.2-1	1c
Table 3.5-2B	1c	TABLE	3.3.2-1	1e
Table 3.5-2B	1d	TABLE	3.3.2-1	1d
Table 3.5-2B	1e	TABLE	3.3.2-1	1b
Table 3.5-2B	2a	TABLE	3.3.2-1	2a
Table 3.5-2B	2b	TABLE	3.3.2-1	2c
Table 3.5-2B	2c	TABLE	3.3.2-1	2b
Table 3.5-2B	3a	TABLE	3.3.2-1	3c
Table 3.5-2B	3b	TABLE	3.3.2-1	3a
Table 3.5-2B	3c	TABLE	3.3.2-1	3b
Table 3.5-2B	4a	TABLE	3.3.5-1	5
Table 3.5-2B	4b	TABLE	3.3.5-1	1
Table 3.5-2B	4c	TABLE	3.3.5-1	6
Table 3.5-2B	4d	TABLE	3.3.5-1	4
Table 3.5-2B	4e	TABLE	3.3.5-1	3
Table 3.5-2B	4f	TABLE	3.3.5-1	2

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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 3.5-2B	5b	TABLE	3.3.2-1	4b
Table 3.5-2B	5c	TABLE	3.3.2-1	4d
Table 3.5-2B	5d	TABLE	Not used	
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Table 3.5-2B	7b	TABLE	3.3.2-1	6b
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Table 3.5-2B	7c	TABLE	3.3.2-1	Note f
Table 3.5-2B	7d	TABLE	3.3.2-1	6e
Table 3.5-2B	7d*	TABLE	3.3.2-1	Note g
Table 3.5-2B	7e	TABLE	3.3.2-1	6c
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Table 3.5-2B	8a	LCO	3.3.4.a	

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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 3.5-2B	9		Deleted - LAR	
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Table 3.5-2B	Act 21	LCO	3.3.2 D	
Table 3.5-2B	Act 21	LCO	3.3.2 E	
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Table 3.5-2B	Act 23	LCO	3.3.2 B	
Table 3.5-2B	Act 24	LCO	3.3.2 D	
Table 3.5-2B	Act 24	LCO	3.3.2 G	
Table 3.5-2B	Act 25	LCO	3.3.2 F	
Table 3.5-2B	Act 26	LCO	3.3.2 I	
Table 3.5-2B	Act 27	LCO	3.7.2	
Table 3.5-2B	Act 28	LCO	3.3.2 F	
Table 3.5-2B	Act 29	LCO	3.3.2 D	
Table 3.5-2B	Act 29	LCO	3.3.2 H	
Table 3.5-2B	Act 30	LCO	3.3.2 I	
Table 3.5-2B	Act 31	LCO	3.3.4 A	
Table 3.5-2B	Act 32		Deleted	
Table 3.5-2B	Act 33	LCO	3.3.4 B	

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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
Table 3.5-2B	Act 34		Deleted - LAR	
Table 3.5-2B	New Action	LCO	3.3.4 C	
Table 3.5-2B	New Action	LCO	3.3.4 D	
Table 3.5-2B	Act 35		Deleted - LAR	
Table 3.5-2B	Act 36		Deleted - LAR	
Table 3.5-2B	Note a	TABLE	3.3.2-1	Note a
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Table 3.5-2B	Note d	TABLE	3.3.2-1	Note c,d
Table 3.5-2B	New Note	TABLE	3.3.2-1	Note e
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 3.15-1	Action a6	LCO	3.3.3 I	
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Table 3.15-1	Action c	TABLE	3.3.3-1	Note b
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-1B	6b	TABLE	3.3.2-1	5c
Table 4.1-1B	6c		Relocated - TRM	
Table 4.1-1B	6d	TABLE	3.3.2-1	5a
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Table 4.1-1B	7b	TABLE	3.3.2-1	6b
Table 4.1-1B	7c	TABLE	3.3.2-1	6d
Table 4.1-1B	7c	TABLE	3.3.2-1	Note f
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Table 4.1-1B	8	SR	3.3.4.1	
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-1B	7d	TABLE	3.3.2-1	Note g
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Table 4.1-1C	2	(Partial)	Deleted	
Table 4.1-1C	3		Relocated - TRM	
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-1C	8	SR	3.3.3.2	
Table 4.1-1C	9		Deleted - Boric Acid LAR	
Table 4.1-1C	10	SR	3.6.8.1	
Table 4.1-1C	10	SR	3.6.8.2	
Table 4.1-1C	11	SR	3.3.4.1	
Table 4.1-1C	12		Deleted - Boric Acid LAR	
Table 4.1-1C	13		Relocated - TRM	
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Table 4.1-1C	15		Relocated - TRM	
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Table 4.1-1C	18	SR	3.3.1.12	
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-1C	21	SR	3.3.3.3	
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Table 4.1-1C	23		CTS Deleted	
Table 4.1-1C	24		Relocated - TRM	
Table 4.1-1C	24	SR	3.3.6.5	
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Table 4.1-1C	26		Relocated - TRM	
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Table 4.1-1C	29	SR	3.3.3.1	

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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-1C	29	(Partial)	Relocated - TRM	
Table 4.1-1C	30		Relocated - TRM	
Table 4.1-1C	31		Relocated - TRM	
Table 4.1-1C	Note 30	SR	3.1.7.1	
Table 4.1-1C	Note 31		Deleted	
Table 4.1-1C	Note 32		Relocated - TRM	
Table 4.1-1C	Note 33		Deleted - Boric Acid LAR	
Table 4.1-1C	Note 34		Deleted	
Table 4.1-1C	Note 35		Deleted	
Table 4.1-1C	Note 36		Deleted	
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Table 4.1-1C	Note 38	SR	3.4.13.5	
Table 4.1-1C	Note 39	SR	3.6.8.2	
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Table 4.1-1C	New Note	SR	3.3.3.3	

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Table 4.1-2A	3	SR	3.4.10.1	
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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Table 4.1-2B	8		Relocated - TRM	
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Table 4.1-2B	9	SR	3.5.4.2	
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Table 4.1-2B	16		Relocated - TRM	
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CTS Section	CTS Table Item Number	Section Type	ITS Section	ITS Table Item Number
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PACKAGE 3.5

EMERGENCY CORE COOLING SYSTEMS (ECCS)

CROSS - REFERENCE

IMPROVED TECHNICAL SPECIFICATIONS

TO

CURRENT TECHNICAL SPECIFICATIONS

Section Cross - Reference

Section 3.5

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

Improved Technical Specification Cross-Reference

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3.5.1.1		SR	New	
3.5.1.1		SR	3.3.A.1.b.(1)	
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3.5.1.3		SR	New	
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3.5.2		LCO	3.3.A.1.c	
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ITS Section	ITS Table Item Number	Section Type	CTS Section	CTS Table Item Number
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3.5.2.1		SR	3.3.A.1.g (1)	
3.5.2.1		SR	New	
3.5.2.2		SR	New	
3.5.2.3		SR	3.3.A.1.g (1)	
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3.5.2.3		SR	3.3.A.1.g (2)	
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3.5.2.6		SR	4.5.A.1.a	
3.5.2.7		SR	4.5.B.3.g.3	
3.5.2.8		SR	New	
3.5.3		LCO	New	
3.5.3		LCO	3.3.A.1.f	
3.5.3.1		SR	New	
3.5.4		LCO	3.3.A.1.a	
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3.5.4.1		SR	New	

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ITS Section	ITS Table Item Number	Section Type	CTS Section	CTS Table Item Number
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ITS PACKAGE CONTENTS

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3.6

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2. Part B Proposed PI ITS and Bases
3. Part C Markup of PI CTS
4. Part D DOC to PI CTS
5. Part E Markup of ISTS and Bases
6. Part F JD from ISTS
7. Part G NSHD for changes to PI CTS
8. Cross-Reference CTS to ITS
9. Cross-Reference ITS to CTS

PACKAGE 3.6

CONTAINMENT SYSTEMS

PART A

INTRODUCTION

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

LICENSE AMENDMENT REQUEST DATED December 11, 2000
Conversion to Improved Standard Technical Specifications

3.6
PART A

Introduction to the Discussion of the proposed Changes to the Current Technical Specifications, Justification of Differences from the Improved Standard Technical Specifications, and the supporting No Significant Hazards Determination

Pursuant to 10 CFR Part 50, Sections 50.59 and 50.90, the holders of Operating Licenses DPR-42 and DPR-60 hereby propose changes to the Facility Operating Licenses and Appendix A, Technical Specifications, as follows and as presented in the accompanying Parts B through G of this Package.

BACKGROUND

Over the past several years the nuclear industry and the Nuclear Regulatory Commission (NRC) have jointly developed Improved Standard Technical Specifications (ISTS). The NRC has encouraged licensees to implement these improved technical specifications as a means for improving plant safety through the more operator-oriented technical specifications, improved and expanded bases, reduced action statement induced plant transients, and more efficient use of NRC and industry resources.

This License Amendment Request (LAR) is submitted to conform the Prairie Island Nuclear Generating Plant (PINGP) Current Technical Specifications (CTS) to NUREG-1431, Improved Standard Technical Specifications, Westinghouse plants, Revision 1 issued April 1995 (ISTS). The resulting new Technical Specifications (TS) for Prairie Island (PI) are the PI Improved Technical Specifications (ITS) which incorporates the PI plant specific information.

NUREG-1431 is based on a hypothetical four loop Westinghouse plant. Since PI is similar in design and vintage to the R.E. Ginna Nuclear Power Plant which has already completed conversion to improved technical specifications, this amendment request relies on the Ginna ITS.

This LAR is also supported by Parts B through G. Part B contains a "clean" copy of the proposed PI ITS and Bases. Part C contains a mark-up of the PI CTS. Part D is the Description of Changes (DOC) to the PI CTS. Part E is a mark-up of the ISTS and Bases which shows the deviations from the standard incorporated to meet PI plant specific requirements. Part F gives the Justification for Deviations (JFD) from the ISTS and Part G provides the No Significant Hazards Determinations (NSHD) for changes to the PI CTS. To facilitate review of this LAR, cross-reference numbers from changes and deviations to the corresponding DOC, JFD and NSHD are provided. The methodology for mark-up and cross-references are described in the next section.

MARK-UP METHODOLOGY

The TS conversion package includes mark-ups of the CTS, the ISTS and the ISTS Bases in accordance with this guidance. Mark-up may be electronic or by hand as indicated.

Current Technical Specifications

The mark-up of the CTS is provided to show where current requirements are placed in the ITS, to show the major changes resulting from the conversion process, and to allow reviewers to evaluate significant differences between the CTS and ITS.

This ITS conversion LAR has been prepared in 14 packages following the Chapter/Section outline of the ITS as follows: 1.0, 2.0, 3.0, 3.1 . . . 3.9, 4.0 and 5.0. Accordingly, each package contains all the elements of Parts A through G as described above. The CTS Bases are not included in the CTS mark-up packages since the Bases have been rewritten in their entirety.

The current Specifications addressed by the associated ITS Chapter/Section are cross-referenced in the left margin to the new ITS location by Specification number and type (G-General, SL-Safety Limit, LCO-Limiting Condition for Operation or SR-Surveillance Requirements). Those portions of each CTS page which are not addressed in the associated ITS Chapter/Section are shadowed (electronic) or clouded and crossed out (by hand) and in the right margin is the comment, “Addressed Elsewhere”.

The CTS are marked-up to incorporate the substance of NUREG-1431 Revision 1. It is not the intent to mark every nuance required to make the format change from CTS to ITS.

In general, only technical changes have been identified. However, some non-technical changes have also been included when the changes cannot easily be determined to be non-technical by a reviewer, or if an explanation is required to demonstrate that the change is non-technical.

Some apparent changes result from the different conventions and philosophies used in the ITS. Generally these apparent changes will not be marked-up in the CTS if there is no resulting change in plant operating requirements.

Changes are identified by a change number in the right margin which map the changed specification requirement to Part D, Discussion of Changes, and Part G, No Significant Hazards Determination (NSHD) and indicate the NSHD category. The change number form is R3.4-02 where the first two numbers, 3.4 in this example, refer to ITS Chapter/Section number 3.4, and the second number, 02 in this example, is a sequentially assigned number for changes within that Chapter/Section, starting with 01. The prefix letter(s) indicates the classification of the change impact. For CTS changes this is also the NSHD category.

The change impact categories defined below conveniently group the type of changes for consideration of the effect of the change on the current plant license in Part D and are also useful for efficient discussion in Part G the "No Significant Hazards Determination" (NSHD) section. If the same change is made in Part E, then the change impact category will also show up in the change number in Part F. These categories are:

A - Administrative changes, editorial in nature that do not involve technical issues. These include reformatting, renaming (terminology changes), renumbering, and rewording of requirements.

L - Less restrictive requirements included in the PI ITS in order to conform to the guidance of NUREG-1431. Generally these are technical changes to existing TS which may include items such as extending Completion Times or reducing Surveillance Frequencies (extended time interval between surveillances). The less restrictive requirements necessitate individual justification. Each is provided with its specific NSHD.

LR - Less restrictive Removal of details and information from otherwise retained specifications which are removed from the CTS and placed in the Bases, Technical Requirements Manual (TRM), Updated Safety Analysis Report (USAR) or other licensee controlled documents. These changes include details of system design and function, procedural details or methods of conducting surveillances, or alarm or indication-only instrumentation.

M - More restrictive requirements included in the PI ITS in order to provide a complete set of Specifications conforming to the guidance of NUREG-1431. Changes in this category may be completely new requirements or they may be technical changes made to current requirements in the CTS.

R - Relocation of Current Specifications to other controlled documents or deletion of current Specifications which duplicate existing regulatory requirements.

Current requirements in the LCOs or SRs that do not meet the 10 CFR 50.36 selection criteria and may be relocated to the Bases, USAR, Core Operating Limits Report (COLR), Operational Quality Assurance Plan (OQAP), plant procedures or other licensee controlled documents. Relocating requirements to these licensee controlled documents does not eliminate the requirement, but rather, places them under more appropriate regulatory controls, such as 10CFR 50.54 (a)(3) and 10 CFR 50.59, to manage their implementation and future changes. Maintenance of these requirements in the TS commands resources which are not commensurate with their importance to safety and distract resources from more important requirements. Relocation of these items will enable more efficient maintenance of requirements under existing regulations and reduce the need to request TS changes for issues which do not affect public safety.

Deletion of Specifications which duplicate regulations eliminates the need to change Technical Specifications when changes in regulations occur. By law, licensees shall meet applicable requirements contained in the Code of Federal Regulations, or have NRC approved exemptions; therefore, restatement in the Technical Specifications is unnecessary.

The methodology for marking-up these changes is as follows:

As discussed above, administrative changes may not be marked-up in detail. Portions of the specifications which are no longer included are identified by use of the electronic strike-out feature (or crossed out by hand). Information being added is inserted into the specification in the appropriate location and is identified by use of shading features (or handwritten/insert pages).

Improved Standard Technical Specifications (NUREG-1431, Rev. 1)

The ISTS mark-up is to identify changes from the ISTS required to create a plant specific ITS by incorporating plant specific values in bracketed fields and identifying other changes with cross-reference to the Part F Justification For Differences.

All deviations from the ISTS are cross-referenced to the Part F justification for differences by a change number in the right margin. The change number form is CL3.4-05 where the prefix letter(s), CL in this example, indicate the classification of the reason for the difference, the first two numbers, 3.4 in this example, refer to the ITS Chapter/Section number 3.4, and the second number, 05 in this example, is a sequentially assigned number for deviations within that Chapter/Section, starting with a number which is larger than the last number from the Part C CTS mark-up. In some instances where a change has been made to the CTS and ISTS, the Part D change number is given since the justification for difference is the same as the discussion of change. The following categories are used as prefixes to indicate the general reason for each difference:

CL - Current Licensing basis. Issues that have been previously licensed for PI and have been retained in the ITS. This includes Specifications dictated by plant design features or the design basis. Since no plant modifications have been or will be made to accommodate conversion to ITS, the plant design basis features shall be incorporated into the PI ITS.

PA - Plant, Administrative. Plant specific wording preference or minor editorial improvements made to facilitate operator understanding.

TA - Traveler, Approved. Deviations made to incorporate an industry traveler which has been approved by the NRC.

TP - Traveler, Proposed. Deviation made to incorporate a proposed industry traveler which as of the time of submittal has not been approved by the NRC.

X - Other, Deviation from the ISTS for any other reason than those given above.

Material which is deleted from the ISTS is identified by use of the WordPerfect strike-out feature (or crossed out by hand). Information being added to the ISTS to generate the PI ITS due to any of the deviations discussed above is identified by use of WordPerfect red-line features (or handwritten/insert pages).

Bracketed Information

Many parameters, conditions, notes, surveillances, and portions of sections are bracketed in the ISTS recognizing that plant specific values are likely to vary from the "generic" values provided in the standard.

If the bracketed value applies to PI, then the "generic" information is retained without any special indication and the brackets are marked using the WordPerfect strike-out feature. In some instances, bracketed material is not discussed. If bracketed material is discussed, a change number is provided which includes the appropriate prefix as described above. When bracketed "generic" material is not incorporated, the bracketed material and brackets are marked with the WordPerfect strike-out feature (or crossed out by hand), the plant specific information is substituted for the bracketed information and a change number is provided which includes the appropriate prefix. Information added is indicated by the WordPerfect red-line (shading) feature (or handwritten/insert pages).

Optional Sections

Due to differing Westinghouse plant designs and methodologies, some ISTS section numbers include a letter suffix indicating that only one of these sections is applicable to any specific plant. The appropriate section is indicated in the Table of Contents, the suffix letter is deleted, and justification, if required, is included in the appropriate Chapter/Section package.

Bases, Improved Standard Technical Specifications (NUREG-1431, Rev. 1)

The ISTS Bases have been marked-up to support the plant specific PI ITS and allow reviewers to identify changes from NUREG-1431. To the extent possible, the words of NUREG-1431, Rev. 1 are retained to maximize standardization. Where the existing words in the NUREG are incorrect or misleading with respect to Prairie Island, they have been revised. In addition, descriptions have been added to cover plant specific portions of the specifications. Change numbers have been provided for the ISTS Bases with the same format as the ISTS Specification mark-up. In some instances, the same change number is used to describe the change.

Material which is deleted from the ISTS Bases is identified by use of the strike-out feature of WordPerfect (or crossed out by hand). Information being added to the ISTS Bases to generate the PI ITS is identified by use of the red-line (shading) feature of WordPerfect (or handwritten/insert pages).

Bracketed Material

Many parameters and portions of Bases are bracketed in the ISTS recognizing that plant specific values and discussions are likely to vary from the "generic" information provided in the standard.

If the bracketed information applies to PI, then the "generic" information is retained without any special indication and the brackets are marked using the WordPerfect strike-out feature. No change number or justification is provided for use of bracketed material, unless special circumstances warrant discussion.

When bracketed "generic" Bases material is not incorporated, the bracketed material and brackets are marked with the WordPerfect strike-out feature (or crossed out by hand) and the plant specific information substituted for the bracketed information is indicated by the WordPerfect red-line (shading) feature (or handwritten/insert pages). A change number with the same format as those used for the ISTS Specification mark-up is provided.

ACRONYMS

Many acronyms are used throughout this submittal. The intent of the final ITS (Part B) is that in general acronyms be written in full prior to the first use. Commonly used acronyms may not be written in full. Other parts of this package may not always write in full each acronym prior to first use; therefore, a list of acronyms is attached to assist in the review of this package.

Attachment to Part A

LIST OF ACRONYMS

AB	Auxiliary Building
ABSVS	Auxiliary Building Special Ventilation System
AFD	Axial Flux Difference
AFW	Auxiliary Feedwater System
ALARA	As Low As Reasonably Achievable
ALT	Actuation Logic Test
ASA	Applicable Safety Analyses
ASME	American Society of Mechanical Engineers
AOO	Anticipated Operational Occurrences
AOT	Allowed Outage Time
BAST	Boric Acid Storage Tank
BIT	Boron Injection Tank
BOC	Beginning of Cycle
CC	Component Cooling
COT	CHANNEL OPERATIONAL TEST
CAOC	Constant Axial Offset Control
CET	Core Exit Thermocouple
CL	Cooling Water
CLB	Current Licensing Basis
COLR	Core Operating Limits Reports
CRDM	Control Rod Drive Mechanism
CRSVS	Control Room Special Ventilation System
CS	Containment Spray
CST	Condensate Storage Tanks
CTS	Current Technical Specification(s)
DBA	Design Basis Accident
DDCL	Diesel Driven Cooling Water
DG	Diesel Generator
DNB	Departure from Nucleate Boiling
DNBR	Departure from nucleate boiling ratio
ECCS	Emergency Core Cooling System

EDG	Emergency Diesel Generators
EFPD	Effective Full Power Days
EOC	End of Cycle
ESF	Engineered Safety Feature
ESFAS	Engineered Safety Features Actuation System
FWLB	Feedwater Line Break
GDC	General Design Criteria
GITS	Ginna Improved Technical Specifications
HELB	High Energy Line Break
HZP	Hot Zero Power
IPE	Individual Plant Evaluation
ISTS	Improved Standard Technical Specifications
ITC	Isothermal Temperature Coefficient
ITS	Improved Technical Specifications
LA	License Amendment
LAR	License Amendment Request
LBLOCA	Large Break LOCA
LCO	Limiting Conditions for Operation
LHR	Linear Heat Rate
LOCA	Loss of Coolant Accident
LTOP	Low Temperature Overpressure Protection
MFIV	Main Feedwater Isolation Valve
MFRV	Main Feedwater Regulation Valve
MFW	Main Feedwater
MOSCA	MODE or Other Specified Condition of Applicability
MOV	Motor Operated Valve
MSIV	Main Steam Isolation Valves
MSLB	Main Steam Line Break
MSLI	Main Steam Line Isolation
MSSV	Main Steam Safety Valves
MTC	Moderator Temperature Coefficient
NIS	Nuclear Instrumentation System
NMC	Nuclear Management Company
NPSH	Net Positive Suction Head

NRCV	Non-Return Check Valve
NUREG-1431	The ISTS for Westinghouse plants
OPPS	OverPressure Protection System
PCT	Peak Cladding Temperature
PI	Prairie Island
PITS	Prairie Island Technical Specifications
PIV	Pressure Isolation Valve
PORV	Power Operated Relief Valve
PRA	Probabilistic Risk Assessment
PSV	Pressurizer Safety Valve
PTLR	Pressure and Temperature Limits Report
QTPR	Quadrant Power Tilt Ratio
RCCA	Rod Cluster Control Assembly
RCP	Reactor Coolant Pump
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RHR	Residual Heat Removal System
RPI	Rod Position Indication
RPS	Reactor Protection System
RTB	Reactor Trip Breaker
RTBB	Reactor Trip Bypass Breaker
RTP	Rated Thermal Power
RTS	Reactor Trip System
RWST	Refueling Water Storage Tank
SBLOCA	Small Break Loss of Coolant Accident
SBVS	Shield Building Ventilation System
SCWS	Safeguards Chilled Water System
SDM	Shut Down Margin
SFDP	Safety Function Determination Program
SFP	Spent Fuel Pool
SG	Steam Generator
SGTR	Steam Generator Tube Rupture
SI	Safety Injection
SL	Safety Limit

SLB	Steam Line Break
SR	Surveillance Requirements
SSC	Structures, Systems and Components
TADOT	Trip Actuating Device Operational Test
TDAFW	Turbine Driven Auxiliary Feedwater
TRM	Technical Requirements Manual
TS	Technical Specifications
TSSC	Technical Specification Selection Criteria
TSTF	Term used for a NUREG change (traveler)
VCT	Volume Control Tank
VFTP	Ventilation Filter Test Program
UHS	Ultimate Heat Sink
USAR	Updated Safety Analysis Report
WCAP	Westinghouse technical report

PACKAGE 3.6

CONTAINMENT SYSTEMS

PART B

PROPOSED PRAIRIE ISLAND IMPROVED TECHNICAL SPECIFICATIONS AND BASES

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1	Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program .	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.1.2	Verify containment average air temperature ≤ 44 °F above shield building average air temperature.	Prior to entering MODE 4 from MODE 5
SR 3.6.1.3	Verify containment shell temperature ≥ 30 °F.	Prior to entering MODE 4 from MODE 5

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks

LCO 3.6.2 Two containment air locks shall be OPERABLE.

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

ACTIONS

---NOTES---

1. Entry and exit is permissible to perform repairs on the affected air lock components.
2. Separate Condition entry is allowed for each air lock.
3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment air locks with one containment air lock door inoperable.	----------NOTES---------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable. -------------------------	
	A.1 Verify the OPERABLE door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	A.2 Lock the OPERABLE door closed in the affected air lock.	24 hours
	<u>AND</u>	

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 -----------NOTE------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. ------------------------------- Verify the OPERABLE door is locked closed in the affected air lock.	 Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more containment air locks with containment air lock interlock mechanism inoperable.	---------------NOTES--------------- 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual. ---	
	B.1 Verify an OPERABLE door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	B.2 Lock an OPERABLE door closed in the affected air lock.	24 hours
	<u>AND</u>	
	B.3 -------------NOTE------------ Air lock doors in high radiation areas may be verified locked closed by administrative means. ------------------------------- Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	<u>AND</u>	
	C.2 Verify a door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	C.3 Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1	-----------------------------NOTES----------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in each air lock can be opened at a time.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

---NOTES---

1. Non-automatic penetration flow path(s) except for 36-inch containment purge system flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE----------- Only applicable to penetration flow paths which do not use a closed system as a containment isolation boundary. ------------------------------ One or more penetration flow paths with one containment isolation valve inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated or mechanically blocked power operated valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours
	AND	
	A.2 ------------NOTES------------ 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------ Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2 (continued)	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
B. ----------NOTE--------- Only applicable to penetration flow paths which do not use a closed system as a containment isolation boundary. ---------------------------- One or more penetration flow paths with two containment isolation valves inoperable.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated power operated valve, closed manual valve, or blind flange.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ------------NOTE----------- Only applicable to penetration flow paths which use a closed system as a containment isolation boundary. ------------------------------ One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated power operated valve, closed manual valve, or blind flange.	72 hours
	AND	
	C.2 ------------NOTES------------ 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each 36-inch containment purge penetration blind flange is installed.	Prior to entering MODE 4 from MODE 5
SR 3.6.3.2	Verify each 18-inch containment inservice purge penetration is blind flanged and meets SR 3.6.1.1.	After each use of the 18-inch containment inservice purge system
SR 3.6.3.3	---------------------------NOTE--------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. --- Verify each non-automatic containment isolation valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	92 days
SR 3.6.3.4	---------------------------NOTE--------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. --- Verify each non-automatic containment isolation valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.5	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.6	Perform leakage rate testing for 18 inch containment inservice purge valves with resilient seals.	Prior to system use
SR 3.6.3.7	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	24 months
SR 3.6.3.8	Verify the combined leakage rate for all shield building bypass leakage paths is in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≤ +2.0 psig.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	8 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 3.6.4.1 Verify containment pressure is within limits.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Spray and Cooling Systems

LCO 3.6.5 Two containment spray trains and two containment cooling trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours
C. One containment cooling train inoperable.	C.1 Restore containment cooling train to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.5.2	Operate each containment cooling train fan coil unit on low motor speed for ≥15 minutes.	31 days
SR 3.6.5.3	Verify each containment cooling train cooling water flow rate to each fan coil unit is ≥900 gpm.	24 months
SR 3.6.5.4	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.5.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.6.5.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.7	Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	24 months
SR 3.6.5.8	Verify each spray nozzle is unobstructed.	10 years

3.6 CONTAINMENT SYSTEMS

3.6.6 Spray Additive System

LCO 3.6.6 The Spray Additive System shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spray Additive System inoperable.	A.1 Restore Spray Additive System to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.1	Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.6.2	Verify spray additive tank solution volume is ≥ 2590 gal (89%).	184 days
SR 3.6.6.3	Verify spray additive tank NaOH solution concentration is ≥9% and ≤ 11% by weight.	184 days
SR 3.6.6.4	Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.7 Hydrogen Recombiners

LCO 3.6.7 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 ------------NOTE------------ LCO 3.0.4 is not applicable. -------------------------------- Restore hydrogen recombiner to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.1	Perform a system functional test for each hydrogen recombiner.	24 months
SR 3.6.7.2	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	24 months
SR 3.6.7.3	Perform a resistance to ground test for each heater phase.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.8 Vacuum Breaker System

LCO 3.6.8 Two vacuum breaker trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment isolation function of one vacuum breaker train inoperable.	A.1 Enter LCO 3.6.3 Condition A.	Immediately
B. Vacuum relief function of one vacuum breaker train inoperable.	B.1 Restore vacuum breaker train vacuum relief function to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.8.1	Verify each vacuum breaker train opens on an actual or simulated containment vacuum equal to or more negative than -0.5 psi and closes on an actual or simulated actuation signal.	92 days
SR 3.6.8.2	Perform CHANNEL CALIBRATION.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.9 Shield Building Ventilation System (SBVS)

LCO 3.6.9 Two SBVS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SBVS train inoperable.	A.1 Restore SBVS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each SBVS train for ≥ 10 continuous hours with heaters operating.	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.9.2	Perform required SBVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.9.3	Verify each SBVS train actuates on an actual or simulated actuation signal.	24 months
SR 3.6.9.4	Verify SBVS isolation dampers actuate on an actual or simulated signal.	24 months
SR 3.6.9.5	Verify each SBVS train OPERABLE and produces a pressure equal to or more negative than -2.00 inch water gauge and maintains a pressure equal to or more negative than -1.82 inches water gage in the annulus.	31 days

3.6 CONTAINMENT SYSTEMS

3.6.10 Shield Building

LCO 3.6.10 The shield building shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Shield building inoperable.	A.1 Restore shield building to OPERABLE status.	24 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 3.6.10.1 Verify one shield building access door in each access opening is closed.	31 days

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1 Containment

BASES

BACKGROUND

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. The containment vessel, including all its penetrations, is a low leakage steel shell designed to contain radioactive material that may be released from the reactor core following a design basis Loss of Coolant Accident (LOCA). Additionally, the containment and shield building provide shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment vessel is a vertical cylindrical steel pressure vessel with a hemispherical dome and ellipsoidal bottom, completely enclosed by a reinforced concrete shield building. A 5 ft wide annular space exists between the walls of the steel containment vessel and the concrete shield building and 7 ft clearance exists between the roofs of the containment vessel and shield building to permit inservice inspection and collection of containment outleakage.

Containment piping penetration assemblies provide for the passage of process, service, sampling and instrumentation pipelines into the containment vessel while maintaining containment OPERABILITY. The shield building provides shielding and allows controlled release of the annulus atmosphere under accident conditions, as well as environmental missile protection for the containment vessel and the Nuclear Steam Supply System.

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. SR 3.6.1.1 leakage rate requirements comply with Ref. 1, as modified by approved exemptions.

BASES

BACKGROUND (continued)

The isolation devices for the penetrations in the containment boundary are a part of the containment leak tight barrier. To maintain this leak tight barrier:

a. All penetrations required to be closed during accident conditions are either:

    1. capable of being closed by an OPERABLE automatic containment isolation system, or

    2. closed by manual valves, blind flanges, or de-activated automatic valves secured in their closed positions, except as provided in LCO 3.6.3, "Containment Isolation Valves";

b. Each air lock is OPERABLE, except as provided in LCO 3.6.2, "Containment Air Locks"; and

c. All equipment hatches are closed.

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting Design Basis Accident (DBA) without exceeding the design leakage rate.

The DBAs that result in a challenge to containment OPERABILITY from high pressures and temperatures are a LOCA and a steam line break (Ref. 2). In addition, release of significant fission product radioactivity within containment can occur from a LOCA. In the DBA analyses, it is assumed that the containment is OPERABLE such that, for the DBAs involving release of fission product radioactivity, release to the environment is controlled by the rate of containment leakage. The reactor containment vessel, including the penetrations, is designed for low leakage to minimize the consequences (dose) to the general public during a DBA. The maximum allowable containment leakage rate is an input to the dose analyses. In the Final Safety Analysis Report (FSAR), the maximum allowable containment leakage used in the large break

BASES

APPLICABLE SAFETY ANALYSES (continued)

LOCA dose analysis was 2.5 weight percent per day. In the SER, the AEC concluded that a maximum containment leakage of 0.5 weight percent per day was acceptable. This formed the basis for the original plant Technical Specification leakage limit of 0.5 weight percent per day. Subsequently, it was concluded that the Shield Building leakage was higher than anticipated which increased the calculated dose. With the higher Shield Building leakage, in order to reduce the calculated dose, the maximum allowable containment leakage was reduced to 0.25 weight percent per day (Ref. 2). This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined for Prairie Island in the Containment Leakage Rate Testing Program as L_a: the maximum allowable containment leakage rate at the containment design maximum internal pressure (P_a). The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on all containment leakage rate testing. L_a is assumed to be 0.25% per day in the safety analysis at P_a = 46.0 psig (Ref. 2).

Satisfactory leakage rate test results are a requirement for the establishment of containment OPERABILITY.

The containment satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Containment OPERABILITY is maintained by limiting leakage to ≤ 1.0 L_a, except prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test. At this time, the applicable (more restrictive) leakage rates must be met.

Compliance with this LCO will ensure a containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis.

Individual leakage rates specified for the containment air lock (LCO 3.6.2), purge valves with resilient seals, and secondary bypass

BASES

LCO (continued)

leakage (LCO 3.6.3) are not specifically part of the acceptance criteria of 10 CFR 50, Appendix J. Therefore, leakage rates exceeding these individual limits only result in the containment being inoperable when the leakage results in exceeding the overall acceptance criteria of 1.0 L_a.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment is not required to be OPERABLE in MODE 5 to prevent leakage of radioactive material from containment. The requirements for containment during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

A.1

In the event containment is inoperable, containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal.

B.1 and B.2

If containment cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable,

BASES

ACTIONS

B.1 and B.2 (continued)

based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

Maintaining the containment OPERABLE requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program. Failure to meet air lock and shield building bypass leakage path leakage limits specified in LCO 3.6.2 and LCO 3.6.3 does not invalidate the acceptability of these overall leakage determinations unless their contribution to overall Type A, B, and C leakage causes that to exceed limits. As left leakage prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test is required to be $\leq 0.6\ L_a$ for combined Type B and C leakage following an outage or shutdown that included Type B and C testing only, and $\leq 0.75\ L_a$ for overall Type A leakage following an outage or shutdown that included Type A testing. At all other times between required leakage rate tests, the acceptance criteria are based on an overall Type A leakage limit of $\leq 1.0\ L_a$. At $\leq 1.0\ L_a$ the offsite dose consequences are bounded by the assumptions of the safety analysis. SR Frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis.

SR 3.6.1.2

Verifying that the maximum temperature differential between average containment and annulus air temperatures is less than or

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.2 (continued)

equal to 44°F ensures that containment operation remains within the limits assumed for the containment analyses. Plant operating experience demonstrates that this limit can only be approached when the plant is in MODES 5 and 6. Requiring this temperature differential to be verified prior to entering MODE 4 from MODE 5 provides assurance this parameter is within acceptable limits prior to establishing conditions requiring containment integrity.

SR 3.6.1.3

Verifying that the minimum containment shell temperature is met ensures that adequate margin above NDTT exists. Plant operating experience demonstrates that this limit can only be approached when the plant is in MODES 5 and 6. Requiring containment shell temperature to be verified prior to entering MODE 4 from MODE 5 provides assurance that the shell temperature is above NDTT prior to establishing conditions requiring containment integrity.

REFERENCES

1. 10 CFR 50, Appendix J.

2. USAR, Section 14.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Containment Air Locks

BASES

BACKGROUND

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, 10 ft in diameter, with a door at each end. The doors are interlocked to prevent simultaneous opening. During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a design basis accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. To effect a leak tight seal, the air lock design uses pressure seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door).

Each personnel air lock is provided with limit switches on both doors that provide control room indication of door position.

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analyses.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident and a rod ejection accident (Ref. 1). The LOCA dose analysis bounds the rod ejection accident releases. In the LOCA analysis, it is assumed that containment is OPERABLE such that release of fission products to the environment is controlled by the rate of containment leakage. The assumed containment leakage rate is 0.25% of containment air weight per day (Ref. 1). This leakage rate is defined at Prairie Island in the Containment Leakage Rate Testing Program as L_a, the maximum allowable containment leakage rate at the containment internal design pressure $P_a = 46.0$ psig. This allowable leakage rate forms the basis for the acceptance criteria imposed on the SRs associated with the air locks.

The containment air locks satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Each containment air lock forms part of the containment pressure boundary. As part of the containment pressure boundary, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the 10CFR50, Appendix J, Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock, including shaft seals and equalizing valve, or test ports, allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events.

BASES

LCO (continued)	Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into or exit from containment. Normal entry into or exit from containment does not render the air lock inoperable.
APPLICABILITY	In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."
ACTIONS	The ACTIONS are modified by three Notes. The first Note allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. For repairs to the inner door, it is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from inside the air lock between the two doors then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

BASES

ACTIONS (continued)

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each air lock. This is acceptable since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable air lock. Complying with the Required Actions may allow for continued operation, and a subsequent inoperable air lock is governed by subsequent Condition entry and application of associated Required Actions.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note 3 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment."

<u>A.1, A.2, and A.3</u>

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (Required Action A.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour and may consist of verifying the control board alarm status for the air lock doors. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires containment be restored to OPERABLE status within 1 hour.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The 24 hour Completion Time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required Action A.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage

BASES

ACTIONS

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

boundary is maintained. The Completion Time of once per 31 days is based on engineering judgment and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls. Required Action A.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. The exception of Note 1 does not affect tracking the Completion Time from the initial entry into Condition A, only the requirement to comply with the Required Actions. Note 2 allows use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7 day restriction begins when the second air lock is discovered inoperable. Containment entry may be required on a periodic basis to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS-required activities) if the containment is entered, using the inoperable air lock, to perform an allowed activity listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

BASES

ACTIONS (continued)

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

With an air lock interlock mechanism inoperable in one or more air locks, the Required Actions and associated Completion Times are consistent with those specified in Condition A.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. Note 2 allows entry into and exit from containment under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

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

With one or more air locks inoperable for reasons other than those described in Condition A or B (e.g., both doors of an air lock are inoperable), Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation per LCO 3.6.1 is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal

BASES

ACTIONS

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

test or if the overall air lock leakage is not within the limits of SR 3.6.2.1. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits due to the large margin between the air lock leakage and the containment overall leakage acceptance criteria.

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour. Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 requires the results of this SR to be evaluated against the acceptance criteria applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

SR 3.6.2.2

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.2.2 (continued)

outer doors will not inadvertently occur. Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency accommodates the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the Surveillance were performed with the reactor at power. This Frequency for the interlock SR is justified by generic operating experience. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock.

REFERENCES

1. USAR, Chapter 14.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves

BASES

BACKGROUND

The containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. These isolation devices are either passive or active (automatic). Manual valves, de-activated power operated valves secured in their closed position (including check valves with flow through the valve secured, i.e., flow stopped by the check valve), blind flanges, and closed systems are considered passive devices. Automatic valves designed to close without operator action following an accident are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system which means it penetrates primary containment, is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere, and has a low probability of being ruptured by an accident (Refs. 1 and 2). These barriers (typically containment isolation valves) make up the Containment Isolation System.

The Containment Isolation System is designed to provide isolation capability following a design basis accident (DBA) for fluid lines which penetrate containment. Major nonessential lines (i.e., fluid systems which do not perform an immediate accident mitigation function) which penetrate containment, except for main steam lines, are either automatically isolated following an accident or are normally maintained closed in MODES 1, 2, 3, and 4. Automatic containment isolation valves are designed to close on a containment isolation signal which is generated by either an automatic safety injection (SI) signal or by manual actuation. The Containment Isolation System can also isolate essential lines at the discretion of

BASES

BACKGROUND (continued)

the operators depending on the accident progression and mitigation requirements.

Upon receipt of a containment pressure High-High signal, both main steam isolation valves close which also causes the instrument air line to containment to isolate if a containment isolation signal is also present. In addition to the isolation signals listed above, the containment purge and inservice purge supply and exhaust line valves and dampers receive isolation signals on a safety injection signal, a containment high radiation condition, a manual containment isolation actuation and manual containment spray initiation. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the outside environment in the event of a release of fission product radioactivity to the containment atmosphere resulting from a DBA.

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

In addition to the normal fluid systems which penetrate containment, two systems which can provide direct access from inside containment to the outside environment are described below.

Containment Purge System (36 inch purge valves)

The Containment Purge System operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access in MODES 5 and 6. The supply and exhaust lines each contain one isolation valve, one isolation damper and a blind flange. The 36 inch purge valves

BASES

BACKGROUND

Containment Purge System (36 inch purge valves) (continued)

and dampers are not tested to verify their leakage rate is within the acceptance criteria of the Containment Leakage Rate Testing Program. Therefore, blind flanges are installed in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained.

Inservice Purge System (18 inch purge valves)

The Inservice Purge System operates to:

a. Reduce the concentration of noble gases within containment prior to and during personnel access; and

b. Provide low volume normal purge and ventilation.

Two containment automatic isolation valves and an automatic Shield Building ventilation damper are provided on each supply and exhaust line. The supply and exhaust lines are designed to have blind flanges installed where the lines pass through the shield building annulus. Normally, during MODES 1, 2, 3, and 4 the blind flanges provide the containment penetration isolation function. When ventilation of containment is required in MODES 1, 2, 3, and 4, the valves will be leak tested, and the blind flanges removed and replaced with a spool piece. Prior to system use, the automatic isolation valves and dampers are verified to be OPERABLE and a debris screen is installed on each line preventing foreign material from inhibiting the proper closing of the valves. When purge of containment is completed and inservice purge system operation is no longer required, the system is returned to its normal operating configuration with the spool pieces removed. The blind flanges are installed and tested to meet the acceptance criteria of the Containment Leakage Rate Testing Program.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO.

The DBAs that result in a release of radioactive material to the containment atmosphere are a loss of coolant accident (LOCA) and a rod ejection accident (Ref. 3). In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves are minimized. The safety analyses assume that the 36 inch purge lines are blind flanged at event initiation.

In calculation of control room and offsite doses following a LOCA, the accident analyses assume that 25% of the equilibrium iodine inventory and 100% of the equilibrium noble gas inventory developed from maximum full power operation of the core is immediately available for leakage from containment (Ref. 3). The containment is assumed to leak at the maximum allowable leakage rate, L_a, for the first 24 hours of the accident and at 50% of this leakage rate for the remaining duration of the accident.

The containment penetration isolation valves ensure that the containment leakage rate remains below L_a by automatically isolating penetrations that do not serve post accident functions and providing isolation capability for penetrations associated with Engineered Safety Features. The maximum isolation time for automatic containment isolation valves is 60 seconds. This isolation time is based on engineering judgement since the control room and offsite dose calculations are performed assuming that leakage from containment begins immediately following the accident with no

BASES

APPLICABLE SAFETY ANALYSES (continued)

credit for transport time or radioactive decay. The 60 second isolation time takes into consideration the time required to drain piping of fluid which can provide an initial containment isolation before the containment isolation valves are required to close and the conservative assumptions with respect to core damage occurring immediately following the accident.

The containment isolation total response time of 60 seconds includes signal delay, diesel generator startup (for loss of offsite power), and containment isolation valve stroke times.

The containment inservice purge valves have been analyzed to demonstrate they are capable of closing during the design basis LOCA (Ref. 2). During plant operation, the containment inservice purge lines are normally blank flanged and the valves are not relied upon as penetration isolation devices.

Containment isolation also isolates the RCS to prevent the release of radioactive material. However, RCS isolation, not isolation of containment, is required for events which result in failed fuel and do not breach the integrity of the RCS (e.g., reactor coolant pump locked rotor). The isolation of containment following these events also isolates the RCS from all non-essential systems to prevent the release of radioactive material outside the RCS. The containment isolation time requirements for these events are bounded by those for the LOCA.

The Containment Isolation System is designed to provide two in series boundaries for each penetration such that no single credible failure or malfunction (expected fault condition) occurring in any active system component can result in loss of isolation or intolerable leakage in compliance with the AEC GDC 53, "Containment Isolation Valves," (Ref. 4).

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES (continued)

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The containment isolation devices covered by this LCO consist of isolation valves (manual valves, check valves, air operated valves, and motor operated valves), pipe and end caps, closed systems, and blind flanges.

Vent and drain valves located between two isolation devices are also containment isolation devices. A cap or blind flange, as applicable, must be installed on these vent and drain lines. A cap or blind flange installed is equivalent to a lock. However, a lock installed on the valve is not equivalent to a cap or blind flange. Therefore, the valve must be shut and the end capped or blind flanged to ensure that proper containment isolation is provided.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The 36 inch purge valves must be blind flanged. The valves covered by this LCO are listed in Reference 2.

The normally closed isolation valves are considered OPERABLE when manual valves are closed, non-automatic power operated valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2.

Purge valves with resilient seals must meet additional leakage rate requirements. The containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing.

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by four Notes. The first Note allows penetration flow paths, except for 36 inch containment purge system penetration flow paths, to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. Due to the blind flanges on the containment purge system lines during plant operation, the penetration flow path containing these flanges may not be opened under administrative controls.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

BASES

ACTIONS (continued)

In the event containment isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated or mechanically blocked power operated containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. Bases 3.6.8 provide further guidance if the vacuum breaker flow path has an inoperable isolation valve. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment and capable of being mispositioned are in the

BASES

ACTIONS

A.1 and A.2 (continued)

correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths which do not use a closed system as a containment isolation barrier. For penetration flow paths which do use a closed system, Condition C provides the appropriate actions.

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

BASES

ACTIONS (continued)

B.1

With two containment isolation valves in one or more penetration flow paths inoperable, the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated power operated valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths which do not use a closed system as a containment isolation barrier. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path.

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a

BASES

ACTIONS

C.1 and C.2 (continued)

single active failure. Isolation barriers that meet this criterion are a closed and de-activated power operated valve, a closed manual valve, and a blind flange. With the exception of the CVCS, a check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the 72 hour Completion Time. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. This required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths which use a closed system. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system as defined in Reference 2.

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered

BASES

ACTIONS

C.1 and C.2 (continued)

acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

D.1 and D.2

If the Required Actions and associated Completion Times are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each 36 inch containment purge system penetration is required to be blind flanged when the plant is in MODES 1, 2, 3, and 4. This Surveillance is designed to ensure that the blind flange is installed prior to entering MODE 4 from MODE 5.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.2

This SR ensures that the 18-inch containment inservice purge penetrations are blind flanged after each use of the system. Since the inservice purge penetration blind flanges are part of the containment boundary, they are required to meet the Containment Leakage Rate Testing Program acceptance criteria required by SR 3.6.1.1 as required by this SR.

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those containment manual valves and blind flanges outside containment and capable of being mispositioned are in the correct position. Since verification of manual valve and blind flange position for containment isolation valves outside containment is relatively easy, the 92 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions. The SR specifies that containment isolation manual valves and blind flanges that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.3.3 (continued)

means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3 and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.4

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation manual valves and blind flanges inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation manual valves and blind flanges that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these containment isolation valves or blind flanges, once they have been verified to be in their proper position, is small.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.5

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.3.6

Since PI only uses the containment inservice purge system infrequently for short periods of time, this SR must be performed prior to each use of the system when containment integrity is required to assure that the valve leakage rate is within an acceptable value.

SR 3.6.3.7

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.8

This SR ensures that the combined leakage rate of all shield building bypass leakage paths is less than or equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The acceptance criteria and Frequency are provided by the Containment Leakage Rate Testing Program.

Bypass leakage is considered part of L_a.

REFERENCES

1. 10 CFR 50 Appendix A.

2. USAR, Section 5.2.

3. USAR, Section 14.

4. AEC "General Design Criteria for Nuclear Power Plant Construction Permits," Criteria 53, issued for comment, July 10, 1967, as referenced in USAR Section 1.2.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4 Containment Pressure

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB).

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment analyses. Should operation occur outside this limit coincident with a Loss of Coolant Accident (LOCA) or Steamline Break (SLB), post accident containment pressures could exceed calculated values.

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the LOCA and SLB analyses to establish the maximum peak containment internal pressure. The limiting events considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure models. The worst case SLB generates larger mass and energy release than the worst case LOCA. Thus, the SLB event bounds the LOCA event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was 16.7 psia (2.0 psig). This resulted in a maximum peak pressure from a SLB of less than 46 psig. The containment analyses show that the maximum peak calculated containment pressure results from the SLB. The maximum containment pressure resulting from the SLB does not exceed the containment design maximum internal pressure, 46 psig.

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

BASES (continued)

LCO

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a LOCA or SLB, the resultant peak containment accident pressure will remain below the containment design maximum internal pressure.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3 and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 8 hours. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 8 hour Completion Time is greater than the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour. However, due to the large containment free volume and limited size of the post-LOCA vent system, 8 hours is allowed to restore containment pressure to within limits. This is justified by the low probability of a DBA during this time period.

BASES

ACTIONS (continued)

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.

REFERENCES

1. USAR, Section 14.5.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5 Containment Spray and Cooling Systems

BASES

BACKGROUND

The Containment Spray and Containment Cooling systems provide containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure and the iodine removal capability of the spray reduces the release of fission product radioactivity from containment to the environment, in the event of a design basis accident (DBA), to within limits. The Containment Spray and Containment Cooling systems are designed, as described in the USAR, to meet the requirements of AEC GDC 37, "Engineered Safety Features Basis for Design," GDC 38, "Reliability and Testing of Engineered Safety Features," GDC 41, "Engineered Safety Features Performance Capability," GDC 42, "Engineered Safety Features Components Capability," GDC 49, "Containment Design Basis," GDC 52, "Containment Heat Removal Systems," GDC 58, "Inspection of Containment Pressure-Reducing Systems," GDC 59, "Testing of Containment Pressure-Reducing Systems," GDC 60, "Testing of Containment Spray Systems," and GDC 61, "Testing of Operational Sequence of Containment Pressure-Reducing Systems," (Ref. 1).

The Containment Cooling System and Containment Spray System are Engineered Safety Feature (ESF) systems. They are designed to ensure that the heat removal capability required during the post accident period can be attained.

Containment Spray System

The Containment Spray System consists of two separate trains of equal capacity, each capable of meeting the design bases.

BASES

BACKGROUND

Containment Spray System (continued)

Each train includes a containment spray pump, spray headers, nozzles, valves, and piping. Each train is powered from a separate ESF bus. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of a DBA.

The Containment Spray System provides a spray of cold borated water mixed with sodium hydroxide (NaOH) from the spray additive tank into the upper regions of containment to reduce the containment pressure and temperature and to remove fission products from the containment atmosphere during a DBA. The RWST solution temperature is an important factor in determining the heat removal capability of the Containment Spray System. Each train of the Containment Spray System provides adequate spray coverage to provide 100% of the Containment Spray System design requirements for containment heat removal.

The Spray Additive System mixes an NaOH solution into the spray. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. Controlling the alkaline pH of the containment sump water minimizes the evolution of iodine and minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the fluid.

The Containment Spray System is actuated either automatically by a containment High-High pressure signal or manually. An automatic actuation signal opens the containment spray pump discharge valves, opens the Spray Additive System valves, starts the two containment spray pumps, and begins injection. A manual actuation of the Containment Spray System requires the operator to simultaneously actuate two separate switches on the main control board to begin the

BASES

BACKGROUND

Containment Spray System (continued)

same sequence. The spray injection continues until containment pressure is reduced to less than 18 psig or an RWST level Low-Low alarm is received. When one of these conditions is reached, containment spray is manually terminated.

Due to the nature of the containment spray system, most functional tests are performed with the isolation valves in the spray supply lines at containment and the spray additive tank isolation valves blocked closed. The tests are considered satisfactory if visual observations indicate all components have operated satisfactorily.

Containment Cooling System

Two trains of containment cooling, each of sufficient capacity to supply 100% of the Containment Cooling System design cooling requirements, are provided. Each train of two fan coil units is normally supplied with chilled water during summer operation or cooling water from separate trains of the Cooling Water System (CL) for winter or emergency operation. Air is drawn into the coolers through the fan and discharged to the containment atmosphere including various compartments (e.g., steam generator and pressurizer compartments).

During normal operation, all four fan coil units are operating. The fans may be operated at high or low speed with chilled water (summer operation) or CL water supplied to the cooling coils. The Containment Cooling System is designed to limit the ambient containment air temperature during normal unit operation to less than 120°F. This temperature limitation ensures that the containment temperature does not exceed the initial temperature conditions assumed for the DBAs.

BASES

BACKGROUND

Containment Cooling System (continued)

In post accident operation following an actuation signal, the Containment Cooling System fans are designed to start automatically in slow speed if not already running. If running in high speed, the fans automatically shift to slow speed. The fans are operated at the lower speed during accident conditions to prevent motor overload from the higher mass atmosphere. The temperature of the cooling water is an important factor in the heat removal capability of the fan coil units.

APPLICABLE SAFETY ANALYSES

The Containment Spray System and Containment Cooling System limit the temperature and pressure that could be experienced following a loss of coolant accident (LOCA) or steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. These events are not assumed to occur simultaneously or consecutively. These postulated events are analyzed with regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and Containment Cooling System being rendered inoperable.

The analyses and evaluations show that under the worst case scenario, the highest peak containment pressure is less than 46 psig. The analyses show that the peak containment temperature meets the intent of the design basis. The analyses and evaluations assume a conservative unit specific power level for the accident under consideration (LOCA or SLB), one containment spray train and one containment cooling train operating, and conservative initial (pre-accident) containment pressure of 2.0 psig. The analyses also assume a response time delayed initiation to provide conservative peak calculated containment pressure and temperature responses.

BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K.

The effect of an inadvertent containment spray actuation has been analyzed. An inadvertent spray actuation results in a containment pressure reduction associated with the sudden cooling effect in the interior of the leak tight containment. Additional discussion is provided in the Bases for LCO 3.6.8.

The modeled Containment Spray System actuation from the containment analysis is based on a response time associated with exceeding the containment High-High pressure setpoint to achieving full flow through the containment spray nozzles.

The analyses of the Main Steam Line Break (MSLB) and LOCA incorporated delays in Containment Spray actuation to account for load restoration, discharge valve opening, containment spray pump windup, and spray line filling (Ref. 3).

Containment cooling train performance for post accident conditions is given in Reference 4. The result of the analyses is that one train of containment cooling with one train of containment spray can provide 100% of the required peak cooling capacity during post accident conditions. The train post accident cooling capacity under varying containment ambient conditions, required to perform the accident analyses, is also shown in Reference 5.

The modeled Containment Cooling System actuation from the containment analysis is based upon a response time associated with receiving a safety injection (SI) signal to achieving full

BASES

APPLICABLE SAFETY ANALYSES (continued)

Containment Cooling System air and safety grade cooling water flow. The Containment Cooling System total response time incorporates delays to account for load restoration and motor windup (Ref. 3).

The Containment Spray System and the Containment Cooling System satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

During a LOCA or SLB, a minimum of one containment cooling train and one containment spray train are required to maintain the containment peak pressure and temperature below the design limits (Ref. 4). Additionally, one containment spray train is also required to remove iodine from the containment atmosphere and thereby maintain concentrations below those assumed in the safety analysis. To ensure that these requirements are met, two containment spray trains and two containment cooling trains must be OPERABLE. Therefore, in the event of an accident, at least one train in each system operates, assuming the worst case single active failure occurs.

Each Containment Spray System includes a spray pump, spray headers, nozzles, valves, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon a containment spray actuation signal. Manual valves in this system that could, if improperly positioned, reduce the spray flow below that assumed for accident analysis, are blocked and tagged in the proper position and maintained under administrative control. Containment spray system motor operated valves, MV-32096 and MV-32097 (Unit 1), and MV-32108 and MV-32109 (Unit 2) are closed with the motor control center supply breakers in the off position.

Each Containment Cooling System typically includes cooling coils, dampers, fans, and controls to ensure an OPERABLE flow path.

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, a LOCA or SLB could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and the Containment Cooling System are not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the other Containment Spray train, reasonable time for repairs, and low probability of a LOCA or SLB occurring during this period.

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows an additional 48 hours for attempting restoration of the containment spray train in MODE 3

BASES

ACTIONS

B.1 and B.2 (continued)

and 36 hours to reach MODE 5 and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

C.1

With one of the containment cooling trains inoperable, the inoperable containment cooling train must be restored to OPERABLE status within 7 days. In this degraded condition the remaining OPERABLE containment spray and cooling trains provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of DBA occurring during this period.

D.1 and D.2

If the Required Action and associated Completion Time of Condition C of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the containment spray flow path provides

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1 (continued)

assurance that the proper flow paths will exist for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment (there are no valves inside containment) and capable of potentially being mispositioned are in the correct position.

SR 3.6.5.2

Operating each containment cooling train fan coil unit on low motor speed for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. Motor current is measured and compared to the nominal current expected for the test condition. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed considering the known reliability of the fan coil units and controls, the two train redundancy available, and the low probability of significant degradation of the containment cooling train occurring between surveillances. It has also been shown to be acceptable through operating experience.

SR 3.6.5.3

Verifying that each containment cooling train cooling water flow rate to each fan coil unit is ≥ 900 gpm provides assurance that the design flow rate assumed in the safety analyses will be achieved (Ref. 4). Terminal temperatures of each fan coil unit are also observed. This test includes verifying operation of all essential features including low motor speed, cooling water valves and normal

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.3 (continued)

ventilation system dampers. The 24 month Frequency is based on: the need to perform these Surveillances under the conditions that apply during a plant outage; the known reliability of the Cooling Water System; the two train redundancy available; and the low probability of a significant degradation of flow occurring between surveillances.

SR 3.6.5.4

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code. Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

SR 3.6.5.5 and SR 3.6.5.6

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment High-High pressure signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. To prevent inadvertent spray in containment, containment spray pump testing with a simulated actuation signal will be performed with the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.5 and SR 3.6.5.6 (continued)

isolation valves in the spray supply lines at the containment and the spray additive tank isolation valves blocked closed. These tests will be considered satisfactory if visual observations indicate all components have operated satisfactorily. The 24 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.5.7

This SR requires verification that each containment cooling train actuates upon receipt of an actual or simulated safety injection signal. The 24 month Frequency is based on engineering judgment. See SR 3.6.5.5 and SR 3.6.5.6, above, for further discussion of the basis for the 24 month Frequency.

SR 3.6.5.8

With the spray header drained, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles.

BASES (continued)

REFERENCES

1. AEC "General Design Criteria for Nuclear Power Plant Construction Permits," Criteria 37, 38, 41, 42, 49, 52, and 58 through 61 issued for comment July 10, 1967, as referenced in USAR Section 1.2.

2. USAR Section 6.4.

3. USAR, Section 14.5.

4. USAR, Section 6.3.

5. USAR, Section 5.2.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.6 Spray Additive System

BASES

BACKGROUND

The Spray Additive System is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA).

Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine absorption capacity of the spray, the spray solution is adjusted to an alkaline pH that promotes iodine hydrolysis, in which iodine is converted to nonvolatile forms. Because of its stability when exposed to radiation and elevated temperature, sodium hydroxide (NaOH) is the spray additive used at Prairie Island. The NaOH added to the spray also ensures a pH value of between 8.5 and 10.5 in the spray and greater than 7.0 in the solution recirculated from the containment sump (Ref. 1). These pH levels minimize the evolution of iodine as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components.

The spray additive tank contains at least 2590 gallons of solution with a sodium hydroxide concentration of 9% to 11% by weight.

The Spray Additive System consists of one spray additive tank, two parallel redundant control valves in the line between the additive tank and the containment spray pump suction header, instrumentation, and recirculation pumps. The NaOH solution is added to the spray water by gravity feed at a fixed ratio to the refueling water storage tank (RWST) flow at the suction of the containment spray pumps. Because of the hydrostatic balance between the two tanks, the flow rate of the NaOH is controlled by the volume per foot of height ratio of the two tanks. This ensures a spray mixture pH that is ≥ 8.5 and ≤ 10.5.

BASES

BACKGROUND (continued)	The Containment Spray System actuation signal opens the valves from the spray additive tank to the spray pump suctions. The 9 wt.% to 11 wt.% NaOH solution is drawn into the spray pump suctions. The percent solution and volume of solution sprayed into containment ensures a long term containment sump pH of ≥ 7.0 and ≤ 10.5. This ensures the continued iodine retention effectiveness of the sump water during the recirculation phase and also minimizes the occurrence of chloride induced stress corrosion cracking of the stainless steel recirculation piping.
APPLICABLE SAFETY ANALYSES	The Spray Additive System is essential to the removal of airborne iodine within containment following a DBA. Following the assumed release of radioactive materials into containment, the containment is assumed to leak at its licensing basis value volume for the first 24 hours following the accident. The DBA response time assumed for the Spray Additive System is the same as for the Containment Spray System and is discussed in the Bases for LCO 3.6.5, "Containment Spray and Cooling Systems." The DBA analyses assume that one train of the Containment Spray System/Spray Additive System is inoperable and that the active spray additive tank volume is added to the remaining Containment Spray System flow path. The Spray Additive System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	The Spray Additive System is necessary to reduce the release of radioactive material to the environment in the event of a DBA. This system provides NaOH which mixes into the spray flow until the end of the injection phase to raise the average spray solution pH to a level conducive to iodine removal, namely, to between 8.5 and 10.5.

BASES

LCO (continued)

This pH range maximizes the effectiveness of the iodine removal mechanism without introducing conditions that may induce caustic stress corrosion cracking of mechanical system components.

The Spray Additive System is considered OPERABLE when:

a. The volume of the spray additive solution is ≥ 2590 gal. and the concentration is ≥ 9 weight % and ≤ 11 weight %;

b. Two flow paths from the spray additive tank to the containment spray pump suction header are OPERABLE;

c. Manual valves are properly positioned and automatic valves are capable of activating to their correct positions; and

d. Piping, valves, instrumentation, and controls for the required flow paths are OPERABLE.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment requiring the operation of the Spray Additive System. The Spray Additive System assists in reducing the iodine fission product inventory prior to release to the environment.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Thus, the Spray Additive System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

If the Spray Additive System is inoperable, it must be restored to OPERABLE within 24 hours. The pH adjustment of the

BASES

ACTIONS

A.1 (continued)

Containment Spray System flow for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a DBA. The 24 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.

B.1 and B.2

If the Spray Additive System cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 48 hours for restoration of the Spray Additive System in MODE 3 and 36 hours to reach MODE 5. This is reasonable when considering the reduced driving force in MODE 3 for the release of radioactive material from the Reactor Coolant System.

SURVEILLANCE REQUIREMENTS

SR 3.6.6.1

Verifying the correct alignment of Spray Additive System manual, power operated, and automatic valves in the spray additive flow path provides assurance that the system is able to provide additive to the Containment Spray System in the event of a DBA. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.1 (continued)

prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment and capable of potentially being mispositioned are in the correct position.

SR 3.6.6.2

To provide effective iodine removal, the containment spray must be an alkaline solution. Since the RWST contents are normally acidic, the volume of the spray additive tank must provide a sufficient volume of spray additive to adjust pH for all water injected. This SR is performed to verify the availability of sufficient NaOH solution in the Spray Additive System. The 184 day Frequency was developed based on the low probability of an undetected change in tank volume occurring during the SR interval (the tank is isolated during normal unit operations). Tank level is indicated and alarmed in the control room, so that there is high confidence that a substantial change in level would be detected.

SR 3.6.6.3

This SR provides verification of the NaOH concentration in the spray additive tank and is sufficient to ensure that the spray solution being injected into containment is at the correct pH level. The 184 day Frequency is sufficient to ensure that the concentration level of NaOH in the spray additive tank remains within the established limits. This is based on the low likelihood of an uncontrolled change in concentration (the tank is normally isolated) and the probability that any substantial variance in tank volume will be detected.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6.4

This SR provides verification that each automatic valve in the Spray Additive System flow path actuates to its correct position. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown that these components usually pass the Surveillance when performed. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. USAR, Section 6.4.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.7 Hydrogen Recombiners

BASES

BACKGROUND

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a hydrogen oxygen reaction.

Per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors," hydrogen recombiners are required to reduce the hydrogen concentration in the containment following a loss of coolant accident (LOCA). The recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor remains in containment, thus eliminating any discharge to the environment. The hydrogen recombiners are manually initiated since flammable limits would not be reached until several days after a Design Basis Accident (DBA).

Two 100% capacity independent hydrogen recombiner systems are provided. Each consists of controls located in the auxiliary building, a power supply and a recombiner. Recombination is accomplished by heating a hydrogen air mixture above 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the recombiner. A single recombiner is capable of maintaining the hydrogen concentration in containment below the 4.0 volume percent (v/o) flammability limit. Two recombiners are provided to meet the requirement for redundancy and independence. Each recombiner is powered from a separate Engineered Safety Features bus, and is provided with a separate power panel and control panel.

APPLICABLE SAFETY ANALYSES

The hydrogen recombiners provide for the capability of controlling the bulk hydrogen concentration in containment to less than the lower flammable concentration of 4.0 v/o following a DBA. This control would prevent a containment wide hydrogen burn, thus ensuring the pressure and temperature assumed in the analyses are

BASES

APPLICABLE SAFETY ANALYSES (continued)

not exceeded. The limiting DBA relative to hydrogen generation is a LOCA.

Hydrogen may accumulate in containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant;

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump;

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space); or

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 1 are used to maximize the amount of hydrogen calculated.

Based on the conservative assumptions used to calculate the hydrogen concentration versus time after a LOCA, the hydrogen concentration in the primary containment would reach 3.5 v/o about 10 days after the LOCA and 4.0 v/o about 6 days later if no recombiner was functioning (Ref. 2). Initiating the hydrogen recombiners when the primary containment hydrogen concentration reaches 3.5 v/o will maintain the hydrogen concentration in the primary containment below flammability limits.

The hydrogen recombiners are designed such that, with the conservatively calculated hydrogen generation rates discussed

BASES

APPLICABLE SAFETY ANALYSES (continued)	above, a single recombiner is capable of limiting the peak hydrogen concentration in containment to less than 4.0 v/o (Ref. 2). The hydrogen recombiners satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).
LCO	Two hydrogen recombiners must be OPERABLE. This ensures operation of at least one hydrogen recombiner in the event of a worst case single active failure. A hydrogen recombiner is considered OPERABLE when its heater, power supply and controls, are OPERABLE. Operation with at least one hydrogen recombiner ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.
APPLICABILITY	In MODES 1 and 2, two hydrogen recombiners are required to control the hydrogen concentration within containment below its flammability limit of 4.0 v/o following a LOCA, assuming a worst case single active failure. In MODES 3 and 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the hydrogen recombiners is low. Therefore, the hydrogen recombiners are not required in MODE 3 or 4. In MODES 5 and 6, the probability and consequences of a LOCA are low, due to the pressure and temperature limitations in these MODES. Therefore, hydrogen recombiners are not required in these MODES.

BASES (continued)

ACTIONS

A.1

With one containment hydrogen recombiner inoperable, the inoperable recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE hydrogen recombiner is adequate to perform the hydrogen control function. However, the overall reliability is reduced because a single failure in the OPERABLE recombiner could result in reduced hydrogen control capability. The 30 day Completion Time is based on the availability of the other hydrogen recombiner, the small probability of a LOCA occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is based on the availability of the other hydrogen recombiner, the small probability of a LOCA occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

B.1

If the inoperable hydrogen recombiner cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

Performance of a system functional test for each hydrogen recombiner ensures the recombiners are operational and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR verifies that the minimum heater sheath temperature increases to ≥ 700°F in ≤ 90 minutes. After reaching 700°F, the power is increased to maximum power for approximately 2 minutes and power is verified to be ≥ 60 kW.

Operating experience has shown that these components usually pass the Surveillance when performed. Therefore, the 24 month Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.7.2

This SR ensures there are no physical problems that could affect recombiner operation (such as loose wiring or structural connections, or deposits of foreign materials). Since the recombiners are mechanically passive, they are not subject to mechanical failure. The only credible failure involves loss of power, blockage of the internal flow, missile impact, etc.

A visual inspection is sufficient to determine abnormal conditions that could cause such failures. The 24 month Frequency for this SR was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

SR 3.6.7.3

This SR requires performance of a resistance to ground test for each heater phase to ensure that there are no detectable grounds in any heater phase. This is accomplished by verifying that the resistance to ground for any heater phase is ≥ 10,000 ohms.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.7.3 (continued)

The 24 month Frequency for this Surveillance was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

REFERENCES

1. Regulatory Guide 1.7, dated 3/10/71.

2. USAR, Section 5.4.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.8 Vacuum Breaker System

BASES

BACKGROUND

The purpose of the vacuum breaker system is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System or Containment Cooling System. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems.

The containment pressure vessel contains two 100% vacuum breaker trains that protect the containment from excessive external loading.

The characteristics of the vacuum breakers and their locations in the containment pressure vessel are as follows:

Two vacuum breakers are used in each of two large vent lines which permit air to flow from the Shield Building annulus into the Reactor Containment Vessel. The vacuum breakers consist of an air to close, spring loaded to open butterfly valve and a self-actuated horizontally installed, swinging disc check valve. An air accumulator is provided for each of the air-operated vacuum breakers to allow vacuum breaker operation in the event of a loss of instrument air. The vent lines enter the containment vessel through independent and widely separated containment penetration nozzles.

APPLICABLE SAFETY ANALYSES

Design of the vacuum breaker system involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation: for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all

BASES

APPLICABLE SAFETY ANALYSES (continued)

spray trains operating, all four containment fan units operating with maximum cooling water flow rate with minimum inlet water temperature, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment shell was designed for an external pressure load equivalent to 0.8 psi greater than the internal pressure. The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The analysis shows that one vacuum breaker train will terminate this transient before 0.8 psi pressure differential is reached.

The vacuum breaker system must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. Two 100% vacuum breaker trains are required to be OPERABLE to ensure that at least one is available, assuming one or both valves in the other line fail to open.

A vacuum breaker train is OPERABLE when both valves, including air supplies, instrumentation, controls and actuating and power circuits, are OPERABLE.

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur whenever these systems are required to be OPERABLE due to inadvertent actuation of these systems. Therefore, the vacuum breaker trains are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, or Containment Cooling System.

In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System, and Containment Cooling System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6.

ACTIONS

A.1

When the containment isolation function of one vacuum breaker train is inoperable, the vacuum breaker train flow path must be isolated in accordance with the requirements of Specification 3.6.3, "Containment Isolation Valves." This Action Statement requires immediate entry into LCO 3.6.3 Condition A to assure that the containment isolation function is maintained in a consistent, timely manner.

When the butterfly valve is inoperable, the pushbutton test circuit should be disabled to "de-activate" the check valve. When the check valve is inoperable, the butterfly valve should be mechanically blocked to ensure that the valve remains closed.

BASES

ACTIONS (continued)

B.1

When the vacuum relief function of one vacuum breaker train is inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The allowed Completion Time is reasonable considering the redundancy of the other vacuum breaker train, its reliable vacuum relief capability due to the passive design and the low probability of an event requiring use of the vacuum breaker system during this time.

C.1 and C.2

If the vacuum breaker train containment isolation function or vacuum relief function cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.8.1

This SR requires verification that each automatic function of each vacuum breaker train actuates as required to perform its safety function. Testing shall include demonstration that an actual or simulated containment vacuum equal to or more negative than -0.5 psi will open the air-operated valve and an actual or simulated safety injection signal will close the valve. The 92 day Frequency is based on engineering judgement and has been shown to be acceptable through operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.8.2

This SR requires the performance of a CHANNEL CALIBRATION. A CHANNEL CALIBRATION is performed every 24 months, or approximately at every refueling. Operating experience has shown that these components usually pass the Surveillance when performed.

REFERENCES

1. USAR, Section 5.2.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.9 Shield Building Ventilation System (SBVS)

BASES

BACKGROUND

As described in the USAR the SBVS is required by AEC GDC 70, "Control of Releases of Radioactivity to the Environment" (Ref. 1), to ensure that radioactive materials that leak from the primary containment into the shield building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment.

The containment has a secondary containment called the shield building, which is a concrete structure that surrounds the steel primary containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects a portion of the containment leakage following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

The SBVS establishes a negative pressure in the annulus between the shield building and the steel containment vessel following a DBA. Filters in the system then control the release of radioactive contaminants to the environment. Shield building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the SBVS.

The SBVS consists of two separate and redundant trains. Each train includes a heater, a prefilter, moisture separators, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, a recirculation fan and an exhaust fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The ventilation system for each Shield Building includes a vent stack which penetrates the Shield Building dome and discharges to the atmosphere. The moisture separators function to reduce the moisture content of the airstream. The HEPA filter and the charcoal adsorber section are credited in the analysis. The

BASES

BACKGROUND (continued)

system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a safety injection (SI) signal. The system is described in Reference 2.

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included to reduce the relative humidity of the airstream. Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers.

The SBVS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the SBVS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE SAFETY ANALYSES

The SBVS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) assumes that only one train of the SBVS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from containment is determined for a LOCA.

The modeled SBVS actuation in the safety analyses is based upon a worst case response time following an SI initiated at the limiting setpoint. The total response time, from accident initiation to attaining a negative pressure in the shield building, is less than 4.5 minutes. This response time bounds the signal delay, diesel generator startup and sequencing time, system startup time, and time for the system to attain the required pressure after starting.

The SBVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES (continued)

LCO

In the event of a DBA, one SBVS train is required to provide the minimum particulate iodine removal assumed in the safety analysis. Two trains of the SBVS must be OPERABLE to ensure that at least one train will operate, assuming that the other train is disabled by a single active failure.

A train of SBVS is OPERABLE when its associated:

a. Recirculation and exhaust fan are OPERABLE;

b. HEPA filter and charcoal adsorber are capable of passing their design flow and performing their filtration function;

c. Manual valves and dampers are properly positioned and automatic valves and dampers are capable of activating to their correct positions; and

d. Heater, ductwork, valves, dampers, instrumentation and controls for the required flow path are OPERABLE.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the shield building. The large break LOCA, on which this system's design is based, is a full power event. Less severe LOCAs and leakage still require the system to be OPERABLE throughout these MODES. The probability and severity of a LOCA decrease as core power and Reactor Coolant System pressure decrease. With the reactor shut down, the probability of release of radioactivity resulting from such an accident is low.

In MODES 5 and 6, the probability and consequences of a DBA are low due to the pressure and temperature limitations in these MODES. Under these conditions, the SBVS is not required to be OPERABLE.

BASES (continued)

ACTIONS

A.1

With one SBVS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. In this degraded condition, the remaining components are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SBVS train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

B.1 and B.2

If the SBVS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters. Periodic operation also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.9.2

This SR verifies that the required SBVS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.9.3

The automatic startup ensures that each SBVS train responds properly. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown that these components usually pass the Surveillance when performed. Therefore the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the SR interval was developed considering that the SBVS equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.9.1.

SR 3.6.9.4

The SBVS isolation dampers are tested to verify OPERABILITY. The dampers are in the closed position during normal plant operation and must reposition for accident operation to draw air through the filters. The 24 month Frequency is considered to be acceptable based on damper reliability and design, mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.9.5

The proper functioning of the fans, dampers, filters, adsorbers, etc., as a system is verified by the ability of each train to produce the required system negative pressure. A negative pressure equal to or more negative than -2.00 inches water gage is required to be developed in the annulus and a negative pressure equal to or more negative than -1.82 inches water gage is required to be maintained after the recirculation dampers open and equilibrium is established. Equilibrium negative pressure equal to or more negative than -1.82 inches water gage is that predicted for non-accident conditions and leakage equal to 75% of the maximum allowable shield building inleakage (Reference 4).

The 31 day Frequency provides assurance that the system will function as required.

REFERENCES

1. AEC "General Design Criteria for Nuclear Power Plant Construction Permits," Criterion 70, issued for comment July 10, 1967, as referenced in USAR Section 1.2.
2. USAR, Section 5.3.
3. USAR, Section 14.9.
4. "Report to the United States Nuclear Regulatory Commission Division of Operating Reactors - Prairie Island Containment Systems Special Analyses", dated April 9, 1976.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.10 Shield Building

BASES

BACKGROUND

The shield building is a concrete structure that surrounds the steel containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects a portion of the containment leakage that may occur following a design basis accident (DBA). This space also allows for periodic inspection of the outer surface of the steel containment vessel. The shield building provides biological shielding for DBA conditions, protects the containment vessel from low temperatures, adverse atmospheric conditions and external missiles, and provides the means for collecting and filtering containment fission product leakage following a DBA (Ref. 1).

Following a DBA the Shield Building Ventilation System (SBVS) establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. The shield building is required to be OPERABLE to ensure retention of containment leakage and proper operation of the SBVS.

APPLICABLE SAFETY ANALYSES

The design basis for shield building OPERABILITY is a loss of coolant accident (LOCA). Maintaining shield building OPERABILITY ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses.

The shield building satisfies Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

LCO

Shield building OPERABILITY must be maintained to ensure proper operation of the SBVS and to limit radioactive leakage

BASES

LCO (continued)

from the containment to those paths and leakage rates assumed in the accident analyses. The Shield Building is OPERABLE when:

a. At least one door in each access opening is closed including when the access opening is being used for normal transit entry and exit;

b. The Shield Building equipment opening is closed; and

c. At least one SBVS train is operable in accordance with SR 3.6.9.5.

APPLICABILITY

Maintaining shield building OPERABILITY prevents leakage of radioactive material from the shield building. Radioactive material may enter the shield building from the containment following a DBA. Therefore, shield building OPERABILITY is required in MODES 1, 2, 3, and 4 when a DBA could release radioactive material to the containment atmosphere.

In MODES 5 and 6, the probability and consequences of a DBA are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours. Twenty-four hours is a reasonable Completion Time considering the limited leakage design of containment and the low probability of a Design Basis Accident occurring during this time period.

BASES

ACTIONS (continued)

B.1 and B.2

If the shield building cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.10.1

Maintaining shield building OPERABILITY requires verifying one door in the access opening closed. Each access opening into the shield building contains one inner and one outer door. The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times. However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit or when maintenance is being performed on an access opening. The 31 day Frequency of this SR is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator.

REFERENCES

1. USAR, Section 5.3.

PACKAGE 3.6

CONTAINMENT SYSTEMS

PART C

MARKUP OF PRAIRIE ISLAND CURRENT TECHNICAL SPECIFICATIONS

List of Pages

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PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2

Improved Technical Specifications Conversion Submittal

~~CONTAINMENT INTEGRITY~~

LR3.6-01

~~CONTAINMENT INTEGRITY shall exist when:~~

~~1. Penetrations required to be isolated during accident conditions are either:~~

~~a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or~~

~~b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in Specifications 3.6.C and 3.6.D.~~

~~2. The equipment hatch is closed and sealed.~~

~~3. Each air lock is in compliance with the requirements of Specification 3.6.M.~~

~~4. The containment leakage rates are within their required limits.~~

CORE ALTERATION

CORE ALTERATION is the movement or manipulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel, which may affect core reactivity. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position.

CORE OPERATING LIMITS REPORT

The CORE OPERATING LIMITS REPORT is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.7.A.6. Plant operation within these operating limits is addressed in individual specifications.

Addressed Elsewhere

~~SHIELD BUILDING INTEGRITY~~

LR3.6-02

~~SHIELD BUILDING INTEGRITY shall exist when:~~

~~1. Each door in each access opening is closed except when the access opening is being used for normal transit entry and exit, then at least one door shall be closed, and~~

~~2. The shield building equipment opening is closed.~~

~~3. The Shield Building Ventilation System is OPERABLE.~~

Addressed Elsewhere

SHUTDOWN MARGIN

SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which:

1) the reactor is subcritical

or

2) the reactor would be subcritical from its present condition assuming all rod cluster control assemblies are fully inserted except for the rod cluster control assembly of highest reactivity worth which is assumed to be fully withdrawn.

SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the specified Surveillance Frequency so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function.

For example, the surveillance frequency for the automatic trip and interlock logic specifies that the functional testing of that system is monthly and that each train shall be tested at least every two months on a STAGGERED TEST BASIS. Per the definition above, for the automatic trip and interlock logic, the Surveillance Frequency interval is monthly and the number of trains (channels) is 2 (n=2), therefore, STAGGERED TEST BASIS requires one train be tested each month such that after two Surveillance Frequency intervals (two months) both trains will have been tested.

STARTUP OPERATION

The process of heating up a reactor above 200°F, making it critical, and bringing it up to POWER OPERATION.

THERMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

3.3.B. Containment Cooling Systems

1. A reactor In MODES 1, 2, 3, and 4 shall have ~~not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless~~ the following conditions ~~are~~ satisfied (except as specified in 3.3.B.2 below): A3.6-03

LCO3.6.5 a. Two containment spray trains ~~pumps~~ are OPERABLE. M3.6-04

LCO3.6.5 b. Two ~~Four~~ containment fan cooler trains ~~units~~ are OPERABLE. M3.6-04

LCO3.6.6 c. The spray additive tank is OPERABLE ~~with not less than 2590 gallons of solution with a sodium hydroxide concentration of 9% to 11% by weight inclusive~~. LR3.6-06

~~d. Manual valves in the above systems that could (if improperly positioned) reduce spray flow below that assumed for accident analysis, shall be blocked and tagged in the proper position. During POWER OPERATION, changes in valve position will be under direct administrative control.~~ LR3.6-07

~~e. The containment spray system motor operated valves MV-32096 and MV-32097 (Unit 2 valves: MV-32108 and MV-32109) shall be closed and shall have the motor control center supply breakers in the off position.~~ LR3.6-07

2. During MODES 1, 2, and 3 ~~STARTUP OPERATION or POWER OPERATION~~, A3.6-03

LCO3.6.5 Cond. E LCO3.6.6 Cond. D ~~any one of the following~~ conditions of inoperability may exist A3.6-08

provided STARTUP OPERATION is discontinued until OPERABILITY is restored.
If OPERABILITY is not restored within the time specified, be in at least MODE 3 ~~HOT SHUTDOWN~~ within the next 6 hours and in MODE 5 ~~COLD SHUTDOWN~~ within ~~the~~ 36 ~~following 30~~ hours for condition 3.3.B.2.a A3.6-11

LCO3.6.5 Cond. D

LCO3.6.5 Cond. B LCO3.6.6 Cond. B or within 84 hours for conditions 3.3.B.2.b and c. L3.6-12

LCO3.6.5 Cond. C a. One containment fan cooler train may be inoperable for 7 days.

LCO3.6.5 Cond. A b. One containment spray train may be inoperable for 72 hours~~.~~

SR3.6.5.1 New SR, verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. M3.6-13

LCO3.6.6 Cond. A c. The spray additive tank may be inoperable for 24 hours.

SR3.6.6.1 SR3.6.6.2 New SRs, verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position and verify tank solution volume. M3.6-14

TABLE TS.3.5-1

ENGINEERED SAFETY FEATURES INITIATION INSTRUMENT LIMITING SET POINTS

Addressed Elsewhere

	FUNCTIONAL UNIT	CHANNEL	LIMITING SET POINTS*
1	High Containment Pressure (Hi)	Safety Injection*	≤4 psig
2	High Containment Pressure (Hi-Hi)	a. Containment Spray	≤23 psig
		b. Steam Line Isolation of Both Lines	≤17 psig
3	Pressurizer Low Pressure	Safety Injection*	≥1815 psig
4	Low Steam Line Pressure	Safety Injection* Lead Time Constant Lag Time Constant	≥500 psig ≥12 seconds ≤2 seconds
5	High Steam Flow in a Steam Line Coincident with Safety Injection and Low T_{avg}	Steam Line Isolation of Affected Line	d/p corresponding to ≤0.745 x 10^6 lb/hr at 1005 psig ≥540 F
6	High-high Steam Flow in a Steam Line Coincident with Safety Injection	Steam Line Isolation of Affected Line	≤d/p corresponding to 4.5 x 10^6 lb/hr at 735 psig
7	High Pressure Difference Between Shield Building and Containment	Containment Vacuum Breakers	≤0.5 psi
8	High Temperature in Ventilation Ducts	Ventilation System Isolation Dampers	120°F
9	High Radiation in Containment Exhaust Air	Containment Ventilation Isolation	<count rate corresponding to 500 mrem/year whole body and 3000 mrem/year skin due to noble gases at the siteboundary

SR3.6.8.1

Addressed Elsewhere

TABLE TS.3.5-1
Page 1 of 2
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3.6 CONTAINMENT SYSTEM

~~Applicability~~

~~Applies to the integrity of the containment system.~~ A3.6-09

~~Objective~~

~~To define the operating status of the containment system for plant operation.~~

Specification

A. Containment Integrity A3.6-03

LCO3.6.1 1. A reactor in MODES 1, 2, 3 and 4 shall have ~~not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless~~ CONTAINMENT INTEGRITY ~~is~~ maintained.

2. If these conditions cannot be satisfied, within one hour initiate the action necessary to place the unit in MODE 3~~HOT SHUTDOWN~~, and be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and in MODE 5~~COLD SHUTDOWN~~ within ~~the following~~ 36~~30~~ hours. A3.6-03 A3.6-11

B. Vacuum Breaker System

LCO3.6.8 1. Both valves in each of two vacuum breaker systems, ~~including actuating and power circuits,~~ shall be OPERABLE in MODES 1, 2, 3 and 4~~when CONTAINMENT INTEGRITY is required~~ (except as specified in 3.6.B.2 and 3.6.B.3 below). LR3.6-16 A3.6-03

2. With one vacuum breaker inoperable with respect to its containment isolation function, apply the requirements of Specification 3.6.C.3, to the isolation valves associated with the inoperable vacuum breaker.

3. One vacuum breaker may be inoperable with respect to its vacuum relief function for 7 days.

C. Containment Isolation Valves

LCO3.6.3 1. ~~Non-automatic~~ containment isolation valves shall be OPERABLE. ~~locked closed or shall be~~ M3.6-17

Penetration flow paths may be unisolated intermittently under direct administrative control ~~and capable of being closed within one minute following an accident~~ when CONTAINMENT INTEGRITY is required (except as specified in 3.6.C.3 below). L3.6-21

LCO3.6.3 Note 2 — Separate Condition entry is allowed for each penetration flow path. A3.6-19

LCO3.6.3 Notes 3 and 4 — Enter applicable Conditions and Required Actions for systems made inoperable by closing containment penetration barriers. M3.6-22

Enter applicable Conditions and Required Actions of 3.6.A above when isolation device leakage results in exceeding the overall containment leakage rate acceptance criteria.

LCO3.6.3

2. Automatic containment isolation valves, including actuation circuits, shall be OPERABLE In MODES 1, 2, 3 and 4 ~~when CONTAINMENT INTEGRITY is required~~ (except as specified in 3.6.C.3 below). A3.6-03

LCO3.6.3 Cond A

3. NOTE: Only applicable to penetration flow paths which do not use a closed system as a containment isolation boundary. A3.6-23

With one or more penetration flow paths with one of the containment isolation valve(s) inoperable, within four hours; A3.6-24

(a) restore the inoperable valve(s) to operable status or,

(b) deactivate ~~the operable~~ or mechanically block a power operated valve in the closed position or, A3.6-26

(c) lock closed a manual ~~at least one~~ valve or use a blind flange or check valve with flow through the valve secured L3.6-27

in each penetration having one inoperable valve~~.~~

AND
verify the affected penetration flow path is isolated every 31 days (for isolation devices outside containment) AND prior to entering MODE 4 from MODE 5 if not performed in the previous 92 days for isolation devices inside containment (isolation devices in high radiation areas may be verified by administrative means and isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means), M3.6-31

or;

apply the requirements of TS 3.6.A.2 above.

LCO3.6.3 Cond B

NOTE: Only applicable to penetration flow paths which do not use a closed system as a containment isolation boundary. M3.6-32

With one or more penetration flow paths with two containment isolation valves inoperable, within one hour:
isolate the penetration flow path by use of at least one closed and de-activated power operated valve, closed manual valve, or blind flange;

or;

apply the requirements of TS 3.6.A.2 above.

LCO3.6.3 Cond C	NOTE: Only applicable to penetration flow paths which use a closed system as a containment isolation boundary. With one or more penetration flow paths with containment isolation valves inoperable, within 72 hours: isolate the penetration flow path by use of at least one closed and de-activated power operated valve, closed manual valve, or blind flange; AND verify the affected penetration flow path is isolated every 31 days (isolation devices in high radiation areas or devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. or; apply the requirements of TS 3.6.A.2 above.	L3.6-33
SR3.6.3.1 SR3.6.3.3 SR3.6.3.4 SR3.6.3.5	New SRs which require verification that the 36 inch containment purge blind flange is installed, verification that penetrations outside containment required to be closed post-accident are closed if not locked, sealed, or otherwise secured, verification that penetrations inside containment required to be closed post-accident are closed if not locked, sealed, or otherwise secured, and verification of automatic isolation valve closure time.	M3.6-34

3.6.D. Containment Purge System

~~1. The 36-inch containment purge system double gasketed blind flanges shall be installed whenever the reactor is above COLD SHUTDOWN. The 18-inch containment inservice purge system double gasketed blind flanges shall be installed whenever the reactor is above COLD SHUTDOWN except as noted below.~~ LR3.6-36

LCO3.6.3 2. The inservice purge system may be operated In MODES 1, 2, 3 and 4 ~~above COLD SHUTDOWN~~ if the following conditions are met: A3.6-03

~~a. The debris screens are installed on the supply and exhaust ducts in containment.~~ LR3.6-36

SR3.6.3.6 b. The two automatic primary containment isolation valves in each duct that penetrates containment shall satisfactorily pass a local leak rate test prior to use. LR3.6-36

~~c. The two automatic primary containment isolation valves and the automatic shield building ventilation damper in each duct that penetrates containment shall be OPERABLE, including instruments and controls associated with them.~~

d. If an inservice purge system automatic primary containment isolation valve or automatic shield building ventilation damper becomes inoperable, apply the requirements of Specification 3.6.C.3.

Addressed Elsewhere

SR3.6.3.2 e. The blind flanges ~~(i.e., 42B (53 in Unit 2) and 43A (52 in Unit 2))~~ shall be reinstalled and satisfactorily pass a local leak rate test, each time after the in-service purge system is used. LR3.6-36

Addressed Elsewhere

E. Auxiliary Building Special Ventilation Zone Integrity

1. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless AUXILIARY BUILDING SPECIAL VENTILATION ZONE INTEGRITY is maintained. If these conditions cannot be satisfied (except as specified in 3.6.E.2 and 3 below) within 24 hours initiate the actions necessary to place both units in HOT SHUTDOWN, and be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

2. Openings in the Auxiliary Special Ventilation Zone are permitted provided they are under direct administrative control and can be reduced to less than 10 square feet within 6 minutes following an accident.

3. Valves and actuation circuits that isolate the Auxiliary Building Normal Ventilation System following an accident may be inoperable for 7 days provided the ventilation system can be manually isolated within 6 minutes following an accident.

Addressed Elsewhere

3.6.F. Auxiliary Building Special Ventilation System

1. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless both trains of the Auxiliary Building Special Ventilation System are OPERABLE (except as specified in 3.F.2 below). In order for the Auxiliary Building Special Ventilation System to be considered OPERABLE, the Turbine Building roof exhauster fans shall be capable of being deenergized within 30 minutes following a loss-of-coolant accident.

2. One train of the Auxiliary Building Special Ventilation System may be inoperable for 7 days.

G. Shield Building Integrity

LCO3.6.10 — A reactor in MODES 1, 2, 3 and 4 shall have ~~not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless~~ SHIELD BUILDING INTEGRITY ~~is~~ maintained. If these conditions cannot be satisfied, within 24 hours initiate the action necessary to place the unit in MODE 3~~HOT SHUTDOWN~~, and be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and in MODE 5~~COLD SHUTDOWN~~ within ~~the following~~ 36~~30~~ hours. — A3.6-03, A3.6-11

SR3.6.10.1 — New SR, 3.6.10.1, verify one door in each access opening to the shield building is closed. — M3.6-37

H. Shield Building Ventilation System

LCO3.6.9 — 1. A reactor in MODES 1, 2, 3 and 4 shall have ~~not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless~~ both trains of the Shield Building Ventilation System ~~are~~ OPERABLE (except as specified in 3.H.2 below). — A3.6-03

2. One train of the Shield Building Ventilation System may be inoperable for 7 days.

I. Containment Internal Pressure

LCO3.6.4 — 1. The internal pressure of the containment vessel shall not exceed 2 psig whenever in MODES 1, 2, 3 and 4 ~~CONTAINMENT INTEGRITY is required~~ (except as specified in 3.6.I.2 below). — A3.6-03

2. If internal pressure exceeds 2 psig and is not corrected within 8 hours, be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5~~COLD SHUTDOWN~~ within ~~the following 30~~ 36 hours. — A3.6-03, A3.6-11

SR3.6.4.1 — New SR, 3.6.4.1, verify containment pressure within limits. — M3.6-41

3.6.J. Containment and Shield Building Air Temperature

SR3.6.1.2

1. The average temperature of the air in the containment vessel shall not exceed 44°F above the average temperature of the air in the shield building whenever in MODES 1, 2, 3 and 4 ~~CONTAINMENT INTEGRITY is required~~ (except as specified in 3.6.J.2 below). A3.6-03

2. If this limit is exceeded and is not corrected within 8 hours, be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5~~COLD SHUTDOWN~~ A3.6-03

   within ~~the following 30~~ 36 hours. A3.6-11

K. Containment Shell Temperature

SR3.6.1.3

1. Containment Shell Temperature shall be equal to or greater than 30°F whenever in MODES 1, 2, 3 and 4~~CONTAINMENT INTEGRITY is required~~ (except as specified in 3.6.K.2 below). A3.6-03

2. If this limit is exceeded and is not corrected within 8 hours, be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5 ~~COLD SHUTDOWN~~ A3.6-03

   within ~~the following 30~~ 36 hours. A3.6-11

L. Electric Hydrogen Recombiners

LCO3.6.7

1. Both containment hydrogen recombiner systems shall be OPERABLE whenever the reactor is in MODES 1 and 2~~above HOT SHUTDOWN~~ (except as specified in 3.6.L.2 below). A3.6-03

2. One hydrogen recombiner system may be inoperable for 30 days.

   If this Required Action and Completion Time is not met, be in MODE 3 within 6 hours. A3.6-39

M. Containment Air Locks

LCO3.6.2

Note:
2. Separate Condition entry is allowed for each air lock.
3. Enter LCO 3.6.1 Conditions when air lock leakage results in exceeding containment leakage rate acceptance criteria.

M3.6-42

1. Each containment air lock shall be OPERABLE with both doors closed whenever in MODES 1, 2, 3 and 4~~CONTAINMENT INTEGRITY is required~~ except as specified in 3.6.M.2 and 3 below; and except for entry and exit, when at least one air lock door shall be closed. A3.6-03

~~TS 3.6-4 Overflow~~

2. With one containment air lock door inoperable:

LCO3.6.2 Note: Entry and exit through an inoperable air lock door is permissible for 7 days under administrative controls if both air locks are inoperable. L3.6-43

a. Verify within one hour ~~Maintain~~ at least the OPERABLE air lock door closed and either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed, M3.6-44

b. Operation may then continue provided that the OPERABLE air lock door is verified to be locked closed at least once per 31 days (air lock doors in high radiation areas may be verified locked closed by administrative means) L3.6-46

LCO3.6.2 Note 1 (Entry and exit through a closed or locked door is permissible for performance of air lock repairs),

c. Otherwise, be in at least Mode 3~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5~~COLD SHUTDOWN~~ A3.6-03

within ~~the following 30~~ 36 hours. A3.6-11

With one or more containment air locks with containment air lock interlock mechanism inoperable, verify within one hour the OPERABLE air lock door is closed, within 24 hours lock the OPERABLE door in the affected air lock and verify an OPERABLE door is locked closed in the affected airlock at least once per 31 days(air lock doors in high radiation areas may be verified locked closed by administrative means). A3.6-47

3. With the containment air lock inoperable, except as the result of an inoperable air lock door, M3.6-51

LCO3.6.2 or inoperable air lock interlock mechanism, immediately evaluate overall containment leakage rate per LCO 3.6.1, verify within one hour ~~maintain~~ at least one air lock door closed; restore

the inoperable air lock to OPERABLE status within 24 hours or be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and MODE 5 ~~COLD SHUTDOWN~~ A3.6-03

within ~~the following 30~~ 36 hours. A3.6-11

SR3.6.2.2 New SR, 3.6.2.2, verify only one door in each air lock can be opened at a time. M3.6-52

Addressed Elsewhere

TABLE TS 4.1-2B

MINIMUM FREQUENCIES FOR SAMPLING TESTS

TEST	FREQUENCY
1. RCS Gross Activity Determination	5/week
2. RCS Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1/14 days (when at power)
3. RCS Radiochemistry E determination	1/6 months(1) (when at power)
4. RCS Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 uCi/gram DOSE EQUIVALENT I-131 or 100/EuCi/gram (at or above cold shutdown), and b) One sample between 2 and 6 hours following THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period (above hot shutdown)
5. RCS Radiochemistry (2)	Monthly
6. RCS Tritium Activity	Weekly
7. Deleted	
8. RCS Boron Concentration (3)	2/Week (4)
9. RWST Boron Concentration	Weekly
10. Boric Acid Tanks Boron Concentration	2/Week
11. Caustic Standpipe NaOH Concentration	184 days ~~Monthly~~
12. Accumulator Boron Concentration	Monthly
13. Spent Fuel Pit Boron Concentration	Weekly

SR3.6.6.3 (item 11)

L3.6-53

* Required at all times

Addressed Elsewhere

TABLE TS.4.1-1C (Page 1 of 4)

MISCELLANEOUS INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Addressed Elsewhere

FUNCTIONAL UNIT REQUIRED	CHECK	CALIBRATE	FUNCTIONAL TEST	RESPONSE TEST	MODES FOR WHICH SURVEILLANCE IS
1. Control Rod Insertion Monitor	M	R	S/U[30]	N.A.	1, 2
2. Analog Rod Position	S	R	S/U[30]	N.A.	1, 2, 3[31], 4[31], 5[31]
3. Rod Position Deviation Monitor	M	N.A.	S/U[30]	N.A.	1, 2
4. Rod Position Bank Counters	S[32]	N.A.	N.A.	N.A.	1, 2, 3[31], 4[31], 5[31]
5. Charging Flow	S	R	N.A.	N.A.	1, 2, 3, 4
6. Residual Heat Removal Pump Flow	S	R	N.A.	N.A.	4[37], 5[37], 6[37]
7. Boric Acid Tank Level	D	R[33]	M[33]	N.A.	1, 2, 3, 4
8. Refueling Water Storage Tank Level	W	R	M	N.A.	1, 2, 3, 4
9. Volume Control Tank Level	S	R	N.A.	N.A.	1, 2, 3, 4
10. Annulus Pressure (Vacuum Breaker)	N.A.	R	R	N.A.	See Note (39)
11. Auto Load Sequencers	N.A.	N.A.	M	N.A.	1
12. Boric Acid Make-up Flow Channel	N.A.	R	N.A.	N.A.	1, 2, 3, 4

SR3.6.8.1
SR3.6.8.2

Addressed Elsewhere

TABLE TS.4.1-1C
(Page 1 of 4)
REV 111 8/10/04

TABLE TS.4.1-1C (Page 4 of 4)

TABLE NOTATIONS

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	Shift
D	Daily
W	Weekly
M	Monthly
Q	Quarterly
S/U	Prior to each reactor startup
Y	Yearly
R	Each Refueling Shutdown
N.A.	Not applicable.

TABLE NOTATION

Addressed Elsewhere

(30) Prior to each startup following shutdown in excess of two days if not done in previous 30 days.

(31) When the reactor trip system breakers are closed and the control rod drive system is capable of rod withdrawal.

(32) Following rod motion in excess of six inches when the computer is out of service.

(33) Transfer logic to Refueling Water Storage Tank.

(34) When either main steam isolation valve is open.

(35) Includes those instruments named in the emergency procedure.

(36) Except for containment hydrogen monitors, and refueling water storage tank level, which are separately specified in this table.

(37) When RHR is in operation.

(38) When the reactor coolant system average temperature is less than the Over Pressure Protection System Enable Temperature specified in the PTLR.

A3.6-03

(39) MODES 1, 2, 3, and 4 ~~Whenever CONTAINMENT INTEGRITY is required.~~

~~TABLE TS.4.1-1C (Page 4 of 4) REV 111 8/10/94~~

4.4 CONTAINMENT SYSTEM TESTS

~~Applicability~~

~~Applies to integrity testing of the steel containments, shield buildings, auxiliary building special ventilation zone, and the associated systems including isolation valves end emergency ventilation systems.~~

~~Objective~~ A3.6-09

~~To assure that potential leakage from containment of either unit to the environs following a hypothetical loss of coolant accident in that unit is held within values assumed in the accident analysis.~~

Specification

A. Containment Leakage Tests

SR3.6.1.1 1. Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

2. Containment Airlock Leakage Tests

SR3.6.2.1 Perform required containment air lock leakage testing in accordance with the Containment Leakage Rate Testing Program.

3. Containment Isolation Valve Leakage Tests

SR3.6.3.8 Perform required containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program.

B. Emergency Charcoal Filter Systems

SR3.6.9.5

1. Periodic tests of the Shield Building Ventilation System shall be performed monthly to demonstrate OPERABILITY. Each redundant train shall be ~~initiated from the control room and~~ determined to be OPERABLE ~~at the time of its periodic test~~ if it meets ~~drawdown performance computed for the test conditions with 75% of the shield building in-leakage specified in Figure TS 4.4-1 after initiation and achieve~~ a pressure -2.0 inches of water gage and maintains a negative pressure equal to or greater than -1.82 inches water gage.

LR3.6-56

Addressed Elsewhere

2. Periodic test of the Auxiliary Building Special Ventilation System shall be performed at approximately quarterly intervals to demonstrate its OPERABILITY. Each redundant train shall be initiated from the control room and determined to be OPERABLE at the time of periodic test if it isolates the normal ventilation system and produces a measurable negative pressure in the ABSVZ within 6 minutes after initiation.

SR3.6.9.2

3. In accordance with VFTP ~~At least once per operating cycle, or once each 18 months, whichever comes first,~~ tests of the filter units in the Shield Building Ventilation System

Addressed Elsewhere

and the Auxiliary Building Special Ventilation System

shall be performed ~~as indicated below:~~

LR3.6-57

~~a. The pressure drop across the combined HEPA filters and charcoal adsorbers shall be demonstrated to be less 6 inches of water at system design flow rate (±10%).~~

~~b. The inlet heaters and associated controls for each train shall be determined to be OPERABLE.~~

At least once per operating cycle

SR3.6.9.3

c. Verify that each train of each ventilation system automatically starts on a simulated or actual signal of safety injection

L3.6-63

and high radiation (Auxiliary Building Special Ventilation only).

Addressed Elsewhere

TS 4.4-2 Overflow

4. a. SR3.6.9.2 The tests listed below shall be performed in accordance with VFTP at least once per operating cycle, or once every 18 months whichever occurs first, or after every 720 hours of system operation or following painting, fire or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers. LR3.6-57

(1) In-place DOP and halogenated hydrocarbons tests at design flows on HEPA filters and charcoal adsorbers banks respectively shall show ≥99% DOP removal for particles having a mean diameter of 0.7 microns and ≥99% halogenated hydrocarbons removal.

(2) Laboratory carbon sample analysis shall show ≥90% radioactive methyl iodide removal efficiency (130°C, 95% RH).

~~b. Cold DOP testing shall be performed after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing that could affect the HEPA bank bypass leakage.~~ LR3.6-57

~~c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the system housing that could affect the charcoal adsorber bank bypass leakage.~~

M3.6-61

SR3.6.9.1 d. Each train ~~circuit~~ shall be operated with the heaters on at least 10 hours every month.

5. SR3.6.9.2 Perform an air distribution test on the HEPA filter bank in accordance with VFTP ~~after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at rated flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.~~ LR3.6-57

C. Containment Vacuum Breakers

SR3.6.8.1 The air-operated valve in each vent line shall be tested at quarterly intervals to demonstrate that an actual or simulated containment vacuum of 0.5 psi will open the valve and an actual or simulated accident signal will close the valve. L3.6-63

SR3.6.1.1 The check valves as well as the butterfly valves will be leak-tested in accordance with the requirements of Specification 4.4.A.3.

E. Containment Isolation Valves

SR3.6.3.7
SR3.6.9.4

During each refueling shutdown, the containment isolation valves, shield building ventilation valves,

Addressed Elsewhere

and the auxiliary building normal ventilation system isolation valves

shall be tested for operability by applying an actual or a simulated accident signal to them. L3.6-63

F. Post Accident Containment Ventilation System

SR3.6.5.7

During each refueling shutdown, the operability of system recirculating fans and valves, including actuation and indication, shall be demonstrated.

G. Containment and Shield Building Air Temperature

A3.6-03

SR3.6.1.2

Prior to entering MODE 4 from MODE 5 ~~establishing reactor conditions requiring containment integrity~~, the average air temperature difference between the containment and its associated Shield Building shall be verified to be within acceptable limits.

H. Containment Shell Temperature

A3.6-03

SR3.6.1.3

Prior to entering MODE 4 from MODE 5 ~~establishing reactor conditions requiring containment integrity~~, the temperature of the containment vessel wall shall be verified to be within acceptable limits.

I. Electric Hydrogen Recombiners

Each hydrogen recombiner train shall be demonstrated Operable at least once each refueling interval by:

SR3.6.7.1 a. ~~Verifying during~~ Performing a recombiner system functional test

~~test that the minimum heater sheath temperature increases to greater than or equal to 700°F within 90 minutes. Upon reaching 700°F, increase the power setting to maximum power for 2 minutes and verify that the power meter reads greater than or equal to 60kw.~~ LR3.6-64

SR3.6.7.2 b. ~~Verifying through a~~ Performing a visual examination that there is no evidence of abnormal conditions within the recombiner

~~enclosures (i.e., loose wiring or structural connections, deposits of foreign materials, etc.), and~~

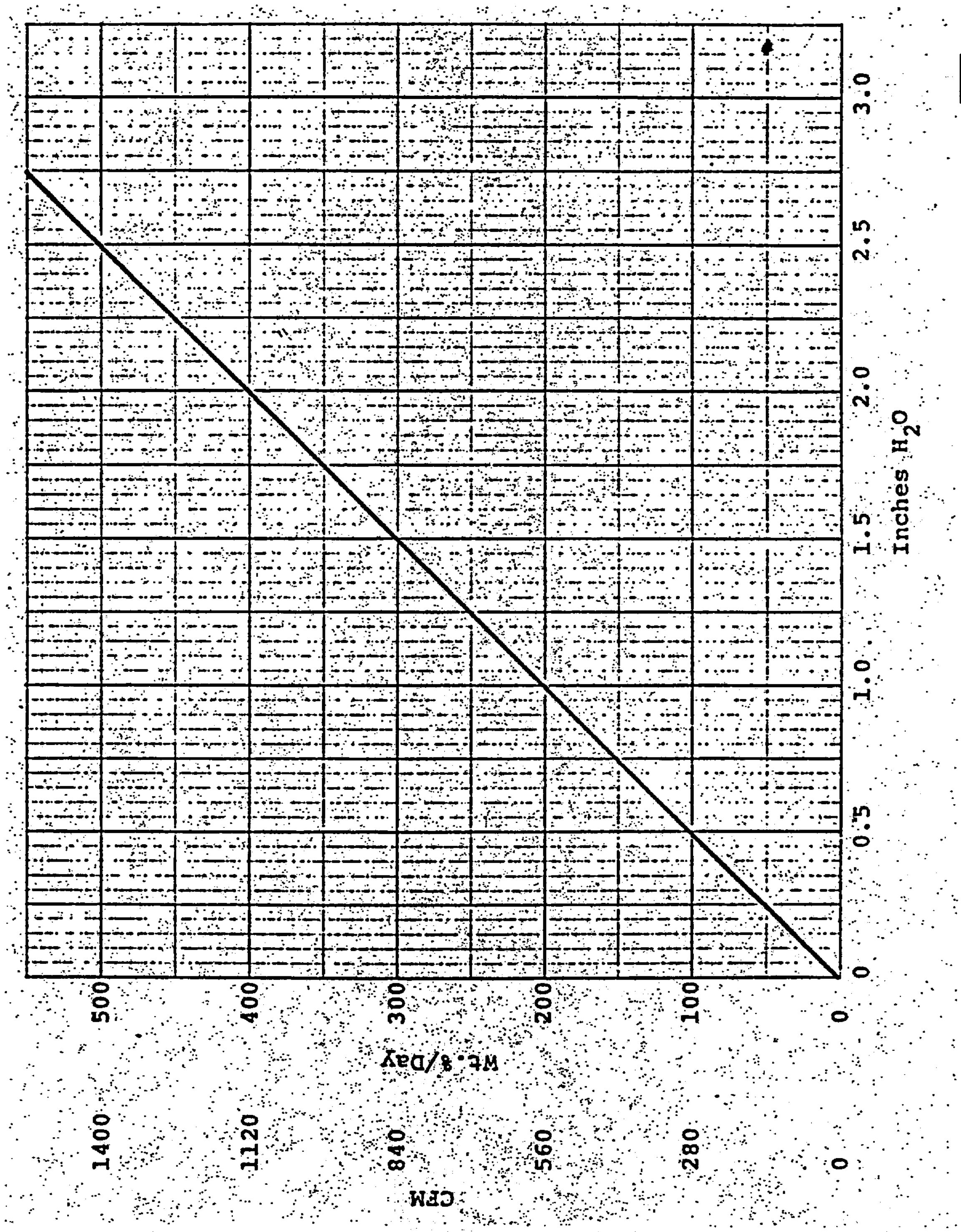
LR3.6-64

SR3.6.7.3 c. ~~Verifying the integrity of all heater electrical circuits by~~ performing a resistance to ground test.

~~The resistance to ground for any heater phase shall be greater than or equal to 10,000 ohms.~~ LR3.6-64

~~This Figure is Deleted~~

LR3.6-56



SHIELD BUILDING DESIGN IN-LEAKAGE RATE

FIGURE TS.4.4-1

4.5 ENGINEERED SAFETY FEATURES

Applicability

Applies to testing of the Emergency Core Cooling System and the Containment Cooling Systems.

Objective

To verify that the subject systems will respond promptly and perform their design functions, if required

Specification

Addressed Elsewhere

A. System Tests

1. Safety Injection System

   a. System tests shall be performed during each reactor refueling shutdown. With the Reactor Coolant System pressure less than or equal to 350 psig and temperature less than or equal to 350°F, a test safety injection signal will be applied to initiate operation of the system. The safety injection and residual heat removal pumps need not be operable for this test.

   b. The test will be considered satisfactory if control board indications and visual observations indicate that all components have received the safety injection signal in the proper sequence and timing, the appropriate pump breakers have opened and closed, and all automatic valves have been placed in the proper position required to establish a safety injection flow path to the reactor coolant system.

2. Containment Spray System

   SR3.6.5.6 a. System tests shall be performed during each reactor refueling shutdown. ~~The tests shall be performed with the isolation valves in the spray supply lines at the containment and the spray additive tank isolation valves blocked closed.~~ Operation of the system is initiated by ~~tripping the normal~~ an actual or simulated actuation signal ~~actuation instrumentation~~. LR3.6-66 L3.6-63

   SR3.6.5.8 b. The spray nozzles shall be checked for proper functioning at least every ten years.

   ~~c. The test will be considered satisfactory if visual observations indicate all components have operated satisfactorily.~~ LR3.6-66

3. Containment Fan Coolers

SR3.6.5.3

LR3.6-67

Each fan cooler unit shall be tested during each reactor refueling shutdown to verify proper operation ~~of all essential features including low motor speed, cooling water valves, and normal ventilation system dampers~~. Individual unit performance will be monitored by ~~observing the terminal temperatures of the fan coil unit and by~~ verifying a cooling water flow rate of greater than or equal to 900 gpm to each fan coil unit.

Addressed Elsewhere

4. Component Cooling Water System

a. System tests shall be performed during each reactor refueling shutdown. Operation of the system will be initiated by tripping the actuation instrumentation.

b. The test will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily.

5. Cooling Water System

a. System tests shall be performed at each refueling shutdown. Tests shall consist of an automatic start of each diesel engine, automatic start of the vertical motor-driven cooling water pump and automatic operation of valves required to mitigate accidents including those valves that isolate non-essential equipment from the system. Operation of the system will be initiated by a simulated accident signal to the actuation instrumentation. The tests will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily and if cooling water flow paths required for accident mitigation have been established.

b. At least once each 18 months, subject each diesel engine to a thorough inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

B. Component Tests

1. Pumps

Addressed Elsewhere

a. The safety injection pumps, residual heat removal pumps and

LR3.6-71

SR3.6.5.4 containment spray pumps shall tested pursuant to Specification 4.2. ~~Acceptable levels of performance shall be that the pumps start and reach their required developed head on minimum recirculation flow and the control board indications and visual observations indicate that the pumps are operating properly for at least 15 minutes.~~

Addressed Elsewhere

b. A test consisting of a manually-initiated start of each diesel engine, and assumption of load within one minute, shall be conducted monthly.

c. The vertical motor-driven cooling water pump shall be operated at quarterly intervals. An acceptable level of performance shall be that the pump starts and reaches its required developed head and the control board indications and visual observations indicate that the pump is operating properly for at least 15 minutes.

2. Containment Fan Motors

SR3.6.5.2 The Containment Fan Coil Units shall be run on low motor speed for at least 15 minutes at intervals of one month. ~~Motor current shall be measured and compared to the nominal current expected for the test conditions.~~ LR3.6-72

3. Valves

Addressed Elsewhere

a. The refueling water storage tank outlet valves shall be tested in accordance with Section 4.2.

b. The accumulator check valves will be checked for OPERABILITY during each refueling shutdown.

c. The boric acid tank valves to the Safety Injection System shall be tested in accordance with Section 4.2.

~~TS 4.5.3 Overflow~~

LR3.6-73

~~d. The spray chemical additive tank valves shall be tested in accordance with Section 4.2.~~

Addressed Elsewhere

e. Actuation circuits for Cooling Water System valves that isolate non-essential equipment from the system shall be tested each refueling outage. Unit 1 SI actuation circuits for Train A and Train B valves shall be tested during Unit 1 refueling outages. Unit 2 SI actuation circuits for Train A and Train B valves shall be tested during Unit 2 refueling outages.

Addressed Elsewhere

f. All motor-operated valves in the

SIS, RHR,

SR3.6.5.5
SR3.6.6.4

Containment Spray,

Addressed Elsewhere

Cooling Water, and Component Cooling Water

System that are designed for operation during the safety injection or recirculation phase of emergency core cooling, shall be tested on an actual or simulated signal for OPERABILITY at each refueling shutdown.

L3.6-63

PACKAGE 3.6

CONTAINMENT SYSTEMS

PART D

DISCUSSION OF CHANGES
(DOC)

to

PRAIRIE ISLAND
CURRENT TECHNICAL SPECIFICATIONS

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

Part D

Package 3.6

CONTAINMENT SYSTEMS

DISCUSSION OF CHANGES TO CURRENT TECHNICAL SPECIFICATIONS

The proposed changes to PI Operating License Appendix A, TS are discussed below and the specific wording changes are shown in parts B, C and E.

For ease of review, all package parts and discussions are organized according to the proposed PI ITS Table of Contents.

NSHD Category	Change Number 3.6-	Discussion of Change
LR	01	CTS 1.0, Definition of Containment Integrity. Specific details of containment integrity have been relocated to the Bases; thus this definition is not required. This change is consistent with the guidance of NUREG-1431. Since the ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) are licensee controlled, this change is less restrictive.
LR	02	CTS 1.0, Shield Building Integrity. Specific details of shield building integrity have been relocated to the Bases; thus this definition is not required. This change is consistent with the guidance of NUREG-1431. Since the ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) are licensee controlled, this change is less restrictive.

NSHD Category	Change Number 3.6-	Discussion of Change
A	03	CTS 3.3.B.1, 3.3.B.2, 3.6.A.1, 3.6.A.2, 3.6.B.1, 3.6.C.2, 3.6.D.2, 3.6.G, 3.6.H.1, 3.6.I.1, 3.6.I.2, 3.6.J.1, 3.6.J.2, 3.6.K.1, 3.6.K.2, 3.6.L.1, 3.6.M.1, 3.6.M.2.c, 3.6.M.3, Table 4.1-1C Note 39, 4.4.G and 4.4.H. The CTS contain prose descriptions of the conditions for which the specification is applicable. This description has been replaced with the equivalent MODES of applicability for ITS. Since the plant conditions to which this specification apply have not changed, this is an administrative change.
M	04	CTS 3.3.B.1.a and 3.3.B.1.b. The LCO statement has been generalized to require "trains" to be OPERABLE instead of requiring specific components. Since the generalized statement is more inclusive, the ITS LCO statement is more restrictive. This change is consistent with the guidance of NUREG-1431. This change is included in the PI ITS to make it complete and conform to the format of NUREG-1431.
	05	Not used.
LR	06	CTS 3.3.B.1.c. Specific details of OPERABILITY requirements have been relocated to the Bases and are included in the applicable statement of SRs. The Specification requirement for the Spray Additive Tank to be OPERABLE envelopes these requirements; thus statement of these specific details is unnecessary. This change is consistent with the guidance of NUREG-1431. Since the ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) are licensee controlled, this change is less restrictive.

NSHD Category	Change Number 3.6-	Discussion of Change
LR	07	CTS 3.3.B.1.d and 3.3.B.1e. Specific TS controls on containment cooling valve positions have been relocated to the Bases. These requirements for control of valve positions are unnecessary in the TS since the ITS LCO and associated SRs provide sufficient control to assure that the valves are maintained in the proper position. This change is consistent with the guidance of NUREG-1431. Since the ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) are licensee controlled, this change is less restrictive.
A	08	CTS 3.3.B.2. CTS states that. "any one of the following conditions of inoperability may exist . . ." This requirement prevents two or more of the listed conditions from existing at the same time. The limitation that only one condition of inoperability may exist is not explicitly stated in ITS. In ITS, these conditions may be in more than one specification. However, in the NUREG-1431 format, the SFDP exists to provide a mechanism to assure that entry into multiple TS Conditions will not result in loss of safety function. Thus the SFDP limits these conditions from simultaneous existence when there is a loss of safety function. The Maintenance Rule will also assure that multiple equipment inoperabilities are evaluated for reduction of plant safety. Since the ITS includes provisions to address this clause, there is no net change in plant safety and this is an administrative change.

NSHD Category	Change Number 3.6-	Discussion of Change
A	09	CTS 3.6 and 4.4. The beginning of each CTS section contains general statements of Applicability and Objectives for that TS section. This Applicability states the systems to which the specifications apply which is a different meaning than the Applicability in NUREG-1431. Since the ITS clearly states within each specification the system to which it applies, administratively these statements have been incorporated. Likewise, the CTS Objectives statement provides an overall purpose for the specifications within the section. These objectives are administratively incorporated in general through the statement of the ITS specification LCO and the supporting Bases. Since these general CTS statements do not establish any regulatory requirements and are incorporated in a broad sense in the ITS, these are considered administrative changes.
	10	Not used.
A	11	CTS 3.3.B.2, 3.6.A.2, 3.6.G, 3.6.I.2, 3.6.J.2, 3.6.K.2, 3.6.M.2.c and 3.6.M.3. As a matter of convention, the CTS define times for Required Actions from the time a new action is initiated. The ITS convention defines all action times from the time the first initiated action occurs. Thus this markup shows the time under the ITS convention which is equivalent to the CTS Required Action time. Since in actuality the time has not been changed, this is an administrative change.

NSHD Category	Change Number 3.6-	Discussion of Change
L	12	CTS 3.3.B.2. CTS allows 36 hours to be in MODE 5 when systems are inoperable in this Specification. This change incorporates NUREG-1431 requirements which allows 84 hours to place the unit in MODE 5 from the time of failure to restore an inoperable containment spray train or inoperable spray additive system to OPERABLE status. This is acceptable considering the significantly reduced driving force for a release of radioactive material from the RCS when the unit is in MODE 3. This is a change from the 36 hours allowed by the CTS. The extended interval to reach MODE 5 also allows additional time for attempting restoration of the containment spray train or spray additive system. This change is consistent with the guidance of NUREG-1431. Since this change will allow the plant to remain at higher temperatures and pressures for longer time intervals when equipment is inoperable, it is considered less restrictive.
M	13	A new SR, 3.6.5.1, is included which requires verification of containment spray system valve positions if the valves are not locked sealed or otherwise secured in position. This SR is a portion of the measures that provide assurance that the system is OPERABLE. Since this is a new requirement in the TS for PI, this is more restrictive on plant operations. This change is consistent with the guidance of NUREG-1431. This more restrictive SR is included to make the PI ITS complete.

NSHD Category	Change Number 3.6-	Discussion of Change
M	14	New SRs, 3.6.6.1 and 3.6.6.2, are included which require verification of spray additive system valve positions if the valves are not locked, sealed, or otherwise secured in position and verification of spray additive tank solution volume. These SRs provide assurance that the system is OPERABLE. Since these are new requirements in the TS for PI, these changes are more restrictive on plant operations. These changes are consistent with the guidance of NUREG-1431. These SRs are included to make the PI ITS complete.
	15	Not used.
LR	16	CTS 3.6.B.1. Specific system components required for OPERABILITY have been relocated to the Bases. These specification details are unnecessary in the TS because the Specification requirement that the vacuum breaker system shall be OPERABLE envelopes these requirements. This change is consistent with the guidance of NUREG-1431. Since the ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) are licensee controlled, this change is less restrictive.
M	17	CTS 3.6.C.1. For consistency with ISTS, this LCO statement has been generalized to apply to all containment isolation valves. Since this may include more valves under this specification, this change is considered more restrictive. This more restrictive change is included to make the PI ITS complete and conform to the philosophy of NUREG-1431.

NSHD Category	Change Number 3.6-	Discussion of Change
	18	Not used.
A	19	CTS 3.6.C.1. In conformance with the guidance of NUREG-1431, a Note is included which allows separate Condition entry for each containment flow path. Since CTS 3.6.C.3 and 3.6.C.3(c) provide guidance for multiple valves in multiple penetrations, CTS allows separate Condition entry. Therefore this explicit statement is an administrative change.
	20	Not used.
L	21	CTS 3.6.C.1. In conformance with the guidance of NUREG-1431, the CTS requirement to be capable of closing containment isolation valves under administrative control within one minute has been revised to allow penetrations to be unisolated intermittently. This proposed specification is functionally equivalent to the CTS in that the penetration flow path will remain under direct administrative control for the purpose of closing the flow path as soon as practicable upon discovery of a need for containment integrity.

NSHD Category	Change Number 3.6-	Discussion of Change
M	22	CTS 3.6.C.1. In conformance with the guidance of NUREG-1431, new requirements for inoperable or leaking barriers have been included. If a system is made inoperable by closing a penetration barrier in accordance with Specification 3.6.3, then the applicable Condition and Required Actions for that system shall be entered. Also if penetration barrier leakage causes the overall containment leakage rate to exceed the allowable leakage rate, then the specification for Containment Integrity (3.6.1) must be entered. These provisions are the same as PI current practice; however, since they are now explicitly required by the ITS, they are considered more restrictive. These more restrictive requirements are included to make the PI ITS complete.
A	23	CTS 3.6.C.3. The ISTS differentiates between penetration flow paths that depend on a closed system as one of the penetration barriers and those that do not use a closed system as one of the barriers. In conformance with ISTS, a Note is added to apply the CTS requirements to those penetrations which do not use a closed system as a barrier. Since the other changes required to conform to this ISTS specification are addressed separately below, this change is considered administrative. This change is consistent with the guidance of NUREG-1431.

NSHD Category	Change Number 3.6-	Discussion of Change
A	24	CTS 3.6.C.3. The ISTS establishes a separate Condition and Action Statement for penetration flow paths with two inoperable penetration barriers. Thus the clause, "penetration flow paths with one" is added to apply the CTS requirements to those penetration flow paths with a single inoperable barrier. Since the Condition for a penetration flow path with two inoperable barriers is addressed separately below, this change is considered administrative. This change is consistent with the guidance of NUREG-1431.
	25	Not used.
A	26	CTS 3.6.C.3(b). CTS allows a valve to be deactivated when a containment isolation valve is inoperable. Minor clarification of wording is provided to be consistent with the guidance of NUREG-1431. This change is also consistent with current plant practices. In order for a valve to be deactivated, it would have to be power operated. Currently, containment vacuum breaker isolation valves have to be mechanically blocked shut if the containment isolation function is inoperable. Since this change is a clarification which does not change or introduce any new plant operating requirements, this is an administrative change.

NSHD Category	Change Number 3.6-	Discussion of Change
L	27	CTS 3.6.C.3(c). In conformance with the guidance of NUREG-1431, two additional options for isolating a penetration barrier, use of a blind flange or check valve, are included. Also a minor clarification that a manual valve may be locked closed has been made. These added options for isolating a flow path are acceptable because they assure that the flow through the penetration flow path is secured. Since new options are provided, plant operation is less restrictive.
	28	Not used.
	29	Not used.
	30	Not used.
M	31	CTS 3.6.C.3(c). New requirements for verification that penetration flow paths are isolated have been included. These new requirements will provide additional assurances that containment integrity is maintained or the plant is shutdown. Since these are new requirements in the TS, they are more restrictive on plant operation. This change is included in the PI ITS to make it complete and consistent with the guidance of NUREG-1431.

NSHD Category	Change Number 3.6-	Discussion of Change
M	32	CTS 3.6.C.3. New requirements for isolation of penetration flow paths with two inoperable penetration barriers are included. CTS would allow four hours to isolate the flow path, whereas this proposed specification requires closure within one hour. Thus, the PI ITS is more restrictive on plant operations. The other provisions of this Condition are identical to those for penetration flow paths with a single inoperable barrier and have been addressed above. This more restrictive change is included in the PI ITS for completeness and consistency with the guidance of NUREG-1431.
L	33	CTS 3.6.C.3. A new Condition is included which allows 72 hours to isolate a penetration flow path with an inoperable isolation barrier when a closed system provides the other containment isolation boundary. CTS do not differentiate inoperable isolation barriers associated with closed systems from those with two isolation barriers. Currently penetration flow paths with inoperable isolation barriers are required to be isolated within four hours. This new Condition is acceptable because the closed system provides on-going isolation of containment as discussed in the justification for TSTF-30 and thus an additional 68 hours for isolation of the penetration flow path is justified. This change provides additional plant operational flexibility and therefore is less restrictive on plant operations. This change implements TSTF-30.

NSHD Category	Change Number 3.6-	Discussion of Change
M	34	New SRs 3.6.3.1, 3.6.3.3, 3.6.3.4 and 3.6.3.5. Four new SRs are included which require verification that the 36-inch containment purge blind flange is installed, verification that penetrations outside containment required to be closed post-accident are closed if not locked, sealed, or otherwise secured, verification that penetrations inside containment required to be closed post-accident are closed if not locked, sealed, or otherwise secured, and verification of automatic isolation valve closure time. These new SRs will provide additional assurance that containment integrity is preserved through the plant operating cycles. Since these are new requirements in the PI TS, these impose additional restrictions on plant operations and thus are classified as a more restrictive change. These changes are consistent with the guidance of NUREG-1431. These SRs are included to make the PI ITS complete.
	35	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
LR	36	CTS 3.6.D.1, 3.6.D.2.a and 3.6.D.2.c. CTS requirements for the 36-inch containment purge system and 18-inch containment inservice purge system essentially require the system to be OPERABLE, including provision for the isolation valves to isolate, and meet containment leakage rate acceptance criteria, or the system is to be blind flanged. These provisions do not add any new requirements beyond those already imposed by PI ITS 3.6.3; thus these details have been relocated to the Bases. CTS 3.6.D.1 requirements for the 36-inch containment purge system is retained as SR 3.6.3.1 to assure that these lines have been blind flanged prior to startup. The leakage rate requirements of SR 3.6.1.1 must be met by these blind flanges. CTS 3.6.D.2.e is retained as SR 3.6.3.2 to assure that the 18-inch containment inservice purge system blind flanges are installed after each use of the system and they meet the Containment Leakage Rate Test Program acceptance criteria.
M	37	A new SR, 3.6.10.1, is included which requires verification that one shield building door in each access opening is closed during plant conditions requiring shield building integrity. This SR will help assure that shield building integrity is maintained. Since this SR imposes new requirements on plant operations it is more restrictive. This change is consistent with the guidance of NUREG-1431. This new SR is included to make the PI ITS complete.
	38	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
A	39	CTS 3.6.L.2. CTS for containment electric hydrogen recombiners does not specify required actions to be taken if a recombiner is inoperable for more than 30 days. CTS would require entry into LCO 3.0.C (ITS 3.0.3) which would require the plant to shutdown to MODE 3. ITS provides a new Required Action which specifies the plant must shutdown to MODE 3. Since this new Required Action results in the same plant actions this is an administrative change.
	40	Not used.
M	41	A new SR, 3.6.4.1, is included which requires verification that containment pressure is within limits. Currently the plant operators verify containment pressure, however it is not a TS required SR. Therefore this new SR is considered more restrictive. This change is consistent with the guidance of NUREG-1431 and is included to make the PI ITS complete.
M	42	CTS 3.6.M. Two new provisions have been included in the containment air lock specifications as Notes 2 and 3 (NUREG-1431, Note 1 is already a part of CTS). Note 2 clarifies current TS provisions. Note 3 also provides clarification to CTS in that entry into LCO 3.6.1 (CTS 3.6.A) is required if airlock leakage exceeds the Containment Leakage Rate Test Program acceptance criteria. Since these notes impose new requirements in the TS, they are considered more restrictive. This change is consistent with the guidance of NUREG-1431 and makes the PI ITS complete.

NSHD Category	Change Number 3.6-	Discussion of Change
L	43	CTS 3.6.M.2. A new Note is included which will allow passage through an inoperable air lock door for up to seven days if both air locks are inoperable. With both air locks inoperable, containment entry may be required on a periodic basis to perform TS Surveillances and Required Actions, as well as other activities on equipment inside containment. This new provision is acceptable since under this Condition one air lock door is still operable and the probability of an event that could pressurize containment during the short time OPERABLE door is expected to be open is very low. CTS do not allow for this condition and would require plant shutdown; thus this change is less restrictive on plant operations. This change is consistent with the guidance of NUREG-1431.
M	44	CTS 3.6.M.2.a. In conformance with the guidance of NUREG-1431, a one hour time limit is imposed on the requirement to verify that the OPERABLE air lock door is closed. Since this requirement imposes additional restrictions on plant operation it is a more restrictive requirement. This change is included in the PI ITS to make it complete.
	45	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
L	46	CTS 3.6.M.2.b. A Note is included to allow verification of locked air lock doors in high radiation areas by administrative means. Verification by administrative means is acceptable since access to high radiation areas is usually restricted for ALARA reasons and therefore the probability of misalignment of the door is unlikely once it has been verified to be in the correct configuration. This change is consistent with the guidance of NUREG-1431.
A	47	CTS 3.6.M.2. A new Condition and associated Required Actions are included which provide requirements for continued operation with a containment air lock inoperable due to inoperable interlock mechanisms. Under the CTS, an inoperable air lock interlock mechanism is considered an inoperable air lock door; thus this is a clarification of CTS requirements. The Required Action, Completion Times and Notes are generally consistent with those applied to an inoperable air lock door; therefore this new Condition is considered an administrative change. This change is consistent with the guidance of NUREG-1431.
	48	Not used.
	49	Not used.
	50	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
M	51	CTS 3.6.M.3. This Condition and associated Required Actions are modified to address the new Condition allowing continued operation with inoperable air lock interlock mechanisms. In addition, this modified Condition requires immediate verification of containment leakage rates and one hour verification that one air lock door is closed. These additional requirements impose new restrictions on plant operations and thus this is a more restrictive change. This change is consistent with the guidance of NUREG-1431. This change is included to make the PI ITS complete.
M	52	A new SR, 3.6.2.2, is included which requires verification only one air lock door can be opened at a time. This SR will help provide assurance that containment integrity is met during plant operations. Since this SR is new to the PI TS it imposes additional restrictions on plant operations and thus is more restrictive. This change is consistent with the guidance of NUREG-1431. This change is included to make the PI ITS complete.
L	53	CTS Table 4.1-2B, Item 11. The Frequency for this SR was revised to 184 days which is consistent with the guidance of NUREG-1431. This change is acceptable since the spray additive tank is normally maintained isolated at power such that changes to the NaOH concentration or level are not expected.
	54	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
	55	Not used.
LR	56	CTS 4.4.B.1 and Figure 4.4-1. Specific details of how the SBVS quarterly test is to be conducted and the input assumptions are unnecessary in the TS. Thus these CTS requirements, including the referenced figure, are relocated to the TRM. Since the TRM is under the control of 10CFR50.59, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431. As explained in the CTS Bases, these requirements result in an equilibrium pressure of -1.82 inches water gage. For clarification, the -1.82 inches water gage requirement is included in ITS SR 3.6.9.5 and its Bases.
LR	57	CTS 4.4.B.3.a, 4.4.B.3.b, 4.4.B.4.a, 4.4.B.4.b, 4.4.B.4.c and 4.4.B.5. Specific details for conduct of ventilation filter tests have been relocated to the Ventilation Filter Test Program in accordance with the requirements of PI ITS Section 5.5, Ventilation Filter Test Program. Since this test program is required by the TS, these requirements remain under regulatory controls. This change is consistent with the guidance of NUREG-1431.
	58	Not used.
	59	Not used.
	60	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
M	61	CTS 4.4.B.4.d. CTS "Circuit" has been replaced with "train" to be consistent with the terminology used in the ISTS. Since a train may include more equipment than a circuit, this is considered a more restrictive requirement. This change is consistent with the guidance of NUREG-1431. This change is incorporated to conform the PI ITS to the philosophy of the ISTS and to make it complete.
	62	Not used.
L	63	CTS 4.4.E, 4.5.A.2.a and 4.5.B.3.f. Provision is included for this system test to be initiated by an actual or simulated signal. This change would allow the test requirements to be satisfied in the event the system actually initiates and thus prevents unnecessary additional testing. Since this change allows increased plant operation flexibility it is a less restrictive change. This change is consistent with the guidance of NUREG-1431.
LR	64	CTS 4.4.I.a, 4.4.I.b and 4.4.I.c. Specific details of how each hydrogen recombiner SR is performed have been relocated to the Bases since these details are unnecessary in the TS. Since the Bases are under the control of PI ITS Section 5.5, Bases Control Program, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431.
	65	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
LR	66	CTS 4.5.A.2.a and 4.5.A.2.c. Specific details of how this containment spray system test is to be conducted and the acceptance criteria are unnecessary in the TS. Thus these CTS requirements are relocated to the Bases. Since the Bases are under the control of PI ITS Section 5.5, Bases Control Program, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431.
LR	67	CTS 4.5.A.3. Specific details of how the containment fan cooler unit tests are to be conducted and the specific parameters to be monitored are unnecessary in the TS. Thus these CTS requirements are relocated to the Bases. Since the Bases are under the control of PI ITS Section 5.5, Bases Control Program, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431.
	68	Not used.
	69	Not used.
	70	Not used.

NSHD Category	Change Number 3.6-	Discussion of Change
LR	71	CTS 4.5.B.1.a. Specific details of how these pump tests are to be conducted and the acceptance criteria are unnecessary in the TS. Thus these CTS requirements are relocated to the IST Program. Since the IST Program is under the control of PI ITS Section 5.5, Programs and Manuals, Inservice Testing Program, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431.
LR	72	CTS 4.5.B.2. Specific details of how this test is to be conducted and the specific parameters to be monitored are unnecessary in the TS. Thus these CTS requirements are relocated to the Bases. Since the Bases are under the control of PI ITS Section 5.5, Bases Control Program, these requirements remain under regulatory controls. These changes are consistent with the guidance of NUREG-1431.
LR	73	CTS 4.5.B.3.d. Requirements for spray additive tank valve testing have been relocated to the IST Program. Since the IST Program is under the control of PI ITS Section 5.5, Inservice Testing Program, these requirements remain under regulatory controls. This change is consistent with the guidance of NUREG-1431.