Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515

June 30, 1995

ComEd

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Dresden Nuclear Power Station Units 2 and 3
Quad Cities Nuclear Power Station Units 1 and 2
Response to NRC Staff Request for Additional Information (RAI)
Regarding the Technical Specification Upgrade Program (TSUP)
Section 3/4.6, "Primary System Boundary"
NRC Docket Nos. 50-237/249 and 50-254/265

References: (a) J. Stang letter to D. Farrar, dated February 22, 1995.

(b) P. Piet letter to T. Murley, dated September 17, 1993.

(c) J. Stang letter to D. Farrar, dated June 13, 1995.

In Reference (a), the NRC staff requested additional information from Commonwealth Edison (ComEd) to support the review and approval of ComEd's TSUP project. Regarding TSUP Section 3/4.6, the NRC requested further evaluation by ComEd concerning the comparison of current requirements and the proposed TSUP requirements. ComEd submitted TSUP Section 3/4.6, "Primary System Boundary," to the NRC staff on September 17, 1993 (Reference (b)). The purpose of this letter is to respond to the NRC staff's RAI for TSUP Section 3/4.6 and supplement the information previously provided in the Reference (b) submittals. The information provided in this letter provides a comprehensive evaluation between current requirements and those proposed in TSUP and provides a discussion demonstrating the acceptability of any apparent deviations. Other portions of ComEd's response to the RAI regarding other Sections of TSUP will be forthcoming under separate cover.

Attachments A and B to this letter provide ComEd's response to NRC staff Generic Question No. 1 (supplemental significant hazards evaluation for TSUP 3/4.6) and Generic Question No. 2. Our response to Generic Question No. 2 includes supplemental information regarding proposed TSUP Section 3/4.6 as well as additional information regarding the comparison to current Technical Specification requirements. Attachment C provides ComEd's response to the NRC staff RAI regarding specific issues for TSUP 3/4.6.

In Section 3.8 of Reference (c), the NRC staff listed as an open item the relocation of current Technical Specification 2.2.B to proposed TSUP 3.6.F. Proposed TSUP 3.6.F is fully discussed herein. In order to most effectively implement TSUP at Dresden Station, ComEd's goal is to complete implementation of TSUP at Dresden during October, 1995. The goal for implementation at Quad Cities is February 1996.

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It should be noted that the proposed TSUP Section 3/4.6 requirements are consistent with and confirm the current safety analysis as described in the UFSAR. Any changes to the UFSAR necessitated by the approval and implementation of TSUP will be incorporated into the UFSAR, where applicable.

In order to assist in the review of TSUP Section 3/4.6, Attachment D to this submittal contains marked-up copies of the current Dresden Unit 2 and Quad Cities Unit 2 Technical Specifications. The mark-ups consist of a cross-reference between current Technical Specification requirements and those proposed in TSUP 3/4.6. The mark-ups are not intended to replace or supersede the TSUP pages submitted to the NRC staff in Reference (b). As such, these pages have been stamped "For Information Only." In addition, Attachment E to this submittal contains marked-up copies of Section 3/4.4 of the BWR/4 STS, where applicable. These mark-ups serve as a cross-reference between STS and the proposed TSUP requirements. The mark-ups are not intended to replace or supersede the TSUP pages submitted to the NRC staff in References (b). As such, these pages have been stamped "For Information Only."

If there are any questions, please contact this office.

Sincerely,

Peter L. Piet

Peter L. Piet
Nuclear Licensing Administrator

Attachments:

A. ComEd Response to Generic Question No. 1
B. ComEd Response to Generic Question No. 2
C. ComEd Response to Questions on TSUP 3/4.6
D. Marked-Up Current Technical Specification Pages
E. Marked-Up BWR/4 STS Pages

J. B. Martin, Regional Administrator - RIII
D.M. Skay, Project Manager - NRR
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Signed before me on this 30th day,

of June, 1995.

Mary Jo Yack
Notary Public

OFFICIAL SEAL
MARY JO YACK
NOTARY PUBLIC STATE OF ILLINOIS
MY COMMISSION EXPIRES 11/29/97

50-237 DRESDEN 2 CEC

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RE TECHNICAL SPECIFICATION UPGRADE PROGRAM GENERIC QUESTION NO. 1

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ATTACHMENT A

ComEd Response to TSUP RAI
Generic Question No. 1

ATTACHMENT A

In response to the NRC staff Request for Additional Information (RAI), the following discussion supersedes ComEd's previous evaluation of Significant Hazards considerations for TSUP 3/4.6. This response satisfies RAI Generic Question No. 1. NRC Staff Generic Question No. 1 requested the following:

> In review of proposed Technical Specification Upgrade Program (TSUP) Sections 3.1, 3.2, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, and 5.0, the No Significant Hazards Consideration for these applications are not completely accurate and the wording used in the evaluations are confusing. The considerations did not take into account the relaxation of the current Technical Specification (TS) requirement with the adoption of the proposed Standard Technical Specifications (STS). In addition, the staff discovered typographical errors in the considerations. The staff requests that Commonwealth Edison Company (ComEd) re-evaluate the No Significant Hazards Consideration for each application covering the sections listed above and supplement the applications by providing an accurate and complete No Significant Hazards Consideration.

ComEd's revised Significant Hazards evaluation is provided below.

ATTACHMENT A

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility, in accordance with the proposed amendment, would not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3) Involve a significant reduction in a margin of safety.

The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated because:

In general, the proposed amendment represents the conversion of current requirements to a more generic format, or the addition of requirements which are based on the current safety analysis. Implementation of these changes will provide increased reliability of equipment assumed to operate in the current safety analysis, or provide continued assurance that specified parameters remain within their acceptance limits, and as such, will not significantly increase the probability or consequences of a previously evaluated accident.

Some of the proposed changes represent minor curtailments of the current requirements which are based on generic guidance or previously approved provisions for other stations. The proposed amendments for Dresden and Quad Cities Station's Technical Specification Section 3/4.6 are based on STS guidelines or later operating BWR plant's NRC accepted changes. Any deviations from STS requirements do not significantly increase the probability or consequences of any previously evaluated accidents for Dresden or Quad Cities Stations. The proposed amendment is consistent with the current safety analyses and has been previously determined to represent sufficient requirements for the assurance and reliability of equipment assumed to operate in the safety analysis, or provide continued assurance that specified parameters remain within their acceptance limits. As such, these changes will not significantly increase the probability or consequences of a previously evaluated accident.

The associated systems that make up the Primary System Boundary are not assumed in any safety analysis to initiate any accident sequence for Dresden or Quad Cities Stations; therefore, the probability of any accident previously evaluated is not increased by the proposed amendment. In addition, the proposed surveillance requirements for the proposed amendments to these systems are generally more prescriptive than the current requirements specified within the Technical Specifications. The additional surveillance requirements improve the reliability and availability of all affected systems and therefore, reduce the consequences of any accident previously evaluated as the probability of the systems outlined within Section 3/4.6 of the proposed Technical Specifications, performing its intended function is increased by the additional surveillances.

Create the possibility of a new or different kind of accident from any previously evaluated because:

In general, the proposed amendment represents the conversion of current requirements to a more generic format, or the addition of requirements which are based on the current safety analysis. Others represent minor curtailments of the current requirements which are based on generic guidance or previously approved provisions for other stations. These changes do not involve revisions to the design of the station. Some of the changes may involve revision in the operation of the station; however, these provide additional restrictions which are in accordance with the current safety analysis, or are to provide for additional testing or surveillances which will not introduce new failure mechanisms beyond those already considered in the current safety analyses.

The proposed amendment for Dresden and Quad Cities Station's Technical Specification Section 3/4.6 is based on STS guidelines or later operating BWR plants' NRC accepted changes. The proposed amendment has been reviewed for acceptability at the Dresden and Quad Cities Nuclear Power Stations considering similarity of system or component design versus the STS or later operating BWRs. Any deviations from STS requirements do not create the possibility of a new or different kind of accident previously evaluated for Dresden or Quad Cities Stations. No new modes of operation are introduced by the proposed changes. Surveillance requirements are changed to reflect improvements in technique, frequency of performance or operating experience at later plants. Proposed changes to action statements in many places add requirements that are not in the present technical specifications. The proposed changes maintain at least the present level of operability. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

The associated systems that make up the Primary System Boundary are not assumed in any safety analysis to initiate any accident sequence for Dresden or Quad Cities Stations. In addition, the proposed surveillance requirements for affected systems associated with the Primary System Boundary are generally more prescriptive than the current requirements specified within the Technical Specifications; therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

ATTACHMENT A

Involve a significant reduction in the margin of safety because:

In general, the proposed amendment represents the conversion of current requirements to a more generic format, or the addition of requirements which are based on the current safety analysis. Others represent minor curtailments of the current requirements which are based on generic guidance or previously approved provisions for other stations. Some of the later individual items may introduce minor reductions in the margin of safety when compared to the current requirements. However, other individual changes are the adoption of new requirements which will provide significant enhancement of the reliability of the equipment assumed to operate in the safety analysis, or provide enhanced assurance that specified parameters remain with their acceptance limits. These enhancements compensate for the individual minor reductions, such that taken together, the proposed changes will not significantly reduce the margin of safety.

The proposed amendment to Technical Specification Section 3/4.6 implements present requirements, or the intent of present requirements in accordance with the guidelines set forth in the STS. Any deviations from STS requirements do not significantly reduce the margin of safety for Dresden or Quad Cities Stations. The proposed changes are intended to improve readability, usability, and the understanding of technical specification requirements while maintaining acceptable levels of safe operation. The proposed changes have been evaluated and found to be acceptable for use at Dresden and Quad Cities based on system design, safety analysis requirements and operational performance. Since the proposed changes are based on NRC accepted provisions at other operating plants that are applicable at Dresden and Quad Cities and maintain necessary levels of system or component reliability, the proposed changes do not involve a significant reduction in the margin of safety.

The proposed amendment for Dresden and Quad Cities Stations will not reduce the availability of systems associated with the Primary System Boundary when required to mitigate accident conditions; therefore, the proposed changes do not involve a significant reduction in the margin of safety.

ATTACHMENT B

ComEd Response to TSUP RAI
Generic Question No. 2

ATTACHMENT B

In response to the NRC staff Request for Additional Information (RAI), the following discussion compares the current Technical Specification (CTS) requirements at Dresden (DR) and Quad Cities (QCS) to those proposed in the Technical Specification Upgrade Program (TSUP). This comparison satisfies RAI Generic Question No. 2. NRC Staff Generic Question No. 2 requested the following:

> In review of proposed TSUP Sections 3.1, 3.2, 3.3, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, and 5.0, ComEd did not evaluate and provide justification for the relaxations and deviations between current TS requirements and the proposed TS. ComEd has compared only the proposed TS to the STS and provided justification for any deviations. To allow the staff to perform a complete and accurate review of the above proposed TSUP TS sections, please provide supplemental evaluations of any changes or deviations between the current TS and the proposed TS. In addition, for each deviation or relaxation between the current TS and the proposed TS an evaluation should be provided which demonstrates that the proposed TS maintains the current licensing basis as described in the Updated Final Safety Analysis Report.

In response to the above NRC staff question, the following evaluation provides a line-by-line comparison of the current DR and QCS TS requirements to the proposed TSUP requirements and includes ComEd's basis for acceptance of the proposed TSUP Section 3/4.6 requirements. All deviations from current DR and QCS TS requirements have been evaluated by ComEd and are discussed below.

Previous comparisons made between the Draft Revision 4, of the BWR/4 Standard Technical Specifications (STS) and the proposed TSUP submittals have been previously provided to the NRC staff. Some but not all information from the previous TSUP submittals may be included below where applicable.

ATTACHMENT B

CTS 3/4.6.A Thermal Limitations

Applicability

CTS 3.6.A.3 includes requirements for shell temperatures and specifies these requirements to be applicable at all times. Proposed TSUP 3.6.K Applicability which is based on STS 3.4.6.1, Applicability also requires applicability at all times. Therefore, the proposed TSUP requirements are equivalent to the CTS applicability requirements.

Actions

The proposed TSUP 3.6.K, Actions are based on STS 3.4.6.1, Actions. There are no explicit CTS Actions specified in CTS 3/4.6.A or 3/4.6.B. The proposed TSUP requirements provide explicit guidance to site operations personnel that include time limitations for evaluating potentially degraded conditions and for performing appropriate actions. In addition, the proposed TSUP requirements include evaluating the residual effects of exceeding a pressure/temperature limit. The proposed requirements have been shown based on industry experience to provide an adequate level of safety regarding pressure/temperature limits for the reactor coolant system. TSUP 3.6.K, Actions ensure that the design limits and thus, the existing safety margins for the reactor coolant system are maintained.

Limiting Condition for Operation (LCO)

1. CTS 3.6.A.1 is encompassed within TSUP 3.6.K, LCO which is based on STS 3.4.6.1. TSUP and STS splits the heatup/cooldown requirements into two separate requirements. The proposed TSUP LCO is conservative when compared to CTS requirements because the TSUP LCO places a maximum limit on the rate of cooldown or heatup. The maximum rate is more stringently controlled since the average heatup or cooldown an any 1 hour period cannot exceed 100° F by the proposed specifications. The CTS requires averaging temperatures over an over which implies that the 100 °F can be exceeded for short periods of time as long as the average value for the one-hour period is maintained below 100 °F. The proposed TSUP requirements have been shown based upon industry experience to provide an adequate level of safety regarding heatup/cooldown rates.

2. CTS 3.6.A.2 has not been retained within proposed TSUP 3/4.6.K. CTS 3.6.A.2 allows a step reduction in reactor coolant temperature of 240 °F. The uncontrolled cooldown rate of 240 °F was based on the maximum expected transient over the lifetime of the reactor. This transient was considered in the design of the pressure vessel. This requirement is more appropriately controlled in an administrative program for tracking vessel thermal transients. The relocation of this specification to an owner controlled program whose revisions are controlled per the provisions of 10 CFR 50.59 does not reduce existing plant safety margins. The proposed TSUP requirements have been shown based upon industry experience to provide an adequate level of safety regarding heatup/cooldown rates.

3. CTS 3.6.A.3 [shell flange to shell temperature differential of < 140 °F] was not originally retained within proposed 3/4.6.K. Specific analyses were made based on a heating and cooling rate of 100 °F/hr. These analyses were also considered in the design of the

pressure vessel. Such information, however, is design details more appropriate for control within the plant's UFSAR. As such, the relocation of this specification to the UFSAR does not reduce existing plant safety margins. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. The proposed TSUP requirements have been shown based upon industry experience to provide an adequate level of safety regarding heatup/cooldown rates. The proposed changes do not significantly reduce existing plant safety margins.

4. CTS 3.6.A.4 for Quad Cities [regarding recirculation pump in an idle loop] is encompassed within TSUP 3.6.D.2, LCO which is based on STS 3.4.1.4, LCO. The proposed and CTS requirements are equivalent, thus ensuring that an idle recirculation loop is not started unless the coolant temperature in the idle loop is within 50 °F of the operating loop coolant temperature.

5. TSUP 3.6.K.3, LCO is a new requirement not included within the CTS for Dresden or Quad Cities. The proposed TSUP LCO includes specific limitations on the maximum reactor coolant temperature change during hydrostatic and leak testing operations. The CTS requirements for the heatup/cooldown curves do not include a maximum reactor coolant temperature gradient value. The proposed TSUP requirements have been shown based upon industry experience to provide an adequate level of safety regarding heatup/cooldown rates during hydrostatic or leak testing operations.

<u>Surveillance Requirement (SR)</u>

1. CTS 4.6.A.1 is encompassed within TSUP 4.6.K.1 which is based on STS 4.4.6.1. Proposed TSUP 4.6.K-1 deviates from STS Figure 3.4.6-1 as the CTS P/T Limits do not include reference to curves A', B' or C'. CTS Figure 3.6-1 for Quad Cities (CTS 3.6.1 for Dresden) has been retained in TSUP as Figure 4.6.K-1.

2. CTS 4.6.A.1 [regarding 15 minute intervals and permanent records] is encompassed within TSUP 4.6.K.1 which is based on STS 4.4.6.1.1. The surveillance frequency has been reduced from every 15 minutes to once per 30 minutes in proposed TSUP 4.6.K.1. The proposed reduction in the periodicity has a negligible impact on existing plant safety margins and provides an adequate frequency to monitor plant heatups and cooldowns. TSUP 4.6.K.1 has been shown based upon industry experience to provide an adequate level of safety regarding monitoring plant thermal transients.

   Proposed TSUP 4.6.K.1 also does not include specific requirements to permanently record the surveillance results as discussed in CTS 4.6.A.1. However, TSUP 6.0 (which has not been submitted as of the date of transmittal of Reference (b)) includes requirements to retain the records of all TS surveillance actions for five years and the records of transient and operational cycles for the duration of the Unit operating license. Therefore, the CTS 4.6.A.1 requirements specifying the permanent recording of heatup/cooldown events are encompassed within TSUP 6.0.

   In addition, the specific details related to the location at which temperatures shall be recorded (CTS 4.6.A.1.a, b and c) has not been retained within proposed TSUP 4.6.K. The specific details related to the methods for performing surveillances are appropriately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. It should be noted that STS 4.4.6.1.1.b was listed as optional. However, the proposed LCO provides an adequate level of protection for assuring the reactor coolant system is maintained within plant design limits; thus, existing plant safety margins are not reduced by the relocation of the specific procedural details for CTS 4.6.A.1.a, 4.6.A.1.b and 4.6.A.1.c to administratively controlled methods.

3. CTS 4.6.A.2 is encompassed within TSUP 4.6.K.2 which is based on STS 4.4.6.1.2. The CTS requirements to perform the surveillance every fifteen minutes until 3 consecutive readings are within five degrees has not been retained within TSUP 4.6.K.2. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59.

   The periodicity for performing TSUP 4.6.K.2 has been changed for Dresden and Quad Cities when compared to CTS 4.6.A.2. CTS 4.6.A.2 specifies that the temperatures be recorded at fifteen minute intervals until three consecutive readings are within five degrees. The proposed TSUP requirements specify that the temperature/pressure limits be verified 15 minutes prior to the withdrawal of control rods to bring the reactor to critical and every 30 minutes thereafter during system heatup. The proposed periodicity (every 30 minutes) is consistent with industry experience that provides an adequate level of safety regarding monitoring reactor vessel temperature parameters.

4. Table 4.4.6.1.3-1 of STS is not incorporated within TSUP per the guidance given in GL 91-01, "Removal of the Schedule for the Withdrawal of Reactor Vessel Material Specimens from the Technical Specifications." The changes are consistent to those found within the Fort Calhoun Technical Specifications. In addition, STS Section 4.4.6.1.3 (proposed Section 4.6.K.3) has been modified similar to the changes noted in the Fort Calhoun Technical Specifications.

5. TSUP 4.6.K.4 is based on STS 4.4.6.1.4. CTS 4.6.B.2 for Quad Cities [CTS 4.6.B.3 for Dresden] regarding the recording of temperatures when the reactor vessel head bolting studs are tightened is encompassed within TSUP 4.6.K.4.b which is based on STS 4.4.6.1.4.b. The proposed TSUP requirements specified for 4.6.K.4.b maintain the equivalent level of protection when compared to the CTS 4.6.B.2 requirements, where applicable for reactor vessel head bolting studs. TSUP 4.6.K.4.a provides additional requirements in Mode 4 (COLD SHUTDOWN) for Dresden or Quad Cities Stations when compared to the CTS. The proposed requirements are applicable to the Dresden and Quad Cities reactor vessel designs and based on industry experience have been shown to provide an adequate level of protection for the reactor pressure vessel for monitoring reactor vessel pressure/temperature limitations during COLD SHUTDOWN conditions.

CTS 3/4.6.B Pressurization Temperature

Applicability

1. CTS 3.6.B.1 [regarding vented and power operation] is encompassed within TSUP 3.6.K, Applicability which is based on STS 3.4.6.1, Applicability. TSUP 3.6.K, Applicability

specifies at all times. CTS 3.6.B.1 provides a restriction (power operation, i.e., Modes 1 and 2) and corresponding action requirement (vent the reactor) for the applicability of Dresden CTS Figure 3.6.1 (CTS Figure 3.6-1 for Quad Cities). The proposed TSUP requirements conservatively expand the applicability requirements to all modes of operations which have been shown based on industry experience to be more appropriate for reactor vessel pressurization and temperature controls.

Actions

1. CTS 3.6.B.1 regarding venting the reactor unless the P/T Limits of CTS Figure 3.6.1 (CTS Figure 3.6-1 for Quad Cities) are satisfied is encompassed within TSUP 3.6.K, Applicability which is based on STS 3.4.6.1, Applicability as discussed above. The proposed TSUP requirements conservatively expand the applicability requirements to all modes of operations which have been shown based on industry experience to be more appropriate for reactor vessel pressurization temperature controls.

Limiting Condition for Operation (LCO)

1. CTS 3.6.B.1 [regarding vented and power operation] is encompassed within TSUP 3.6.K, Applicability which is based on STS 3.4.6.1, Applicability. This issue has been previously discussed above in CTS 3/4.6.B, Applicability.

2. CTS 3.6.B.1 [regarding Figure 3.6-1 for Quad Cities and 3.6.1 for Dresden] is encompassed within TSUP 3.6.K, LCO and Figure 3.6.K-1 which is based on STS Figure 3.4.6.1-1. Proposed TSUP Figure 3.6.K-1 is identical to CTS Figure 3.6-1 for Quad Cities and CTS Figure 3.6.1 for Dresden.

3. CTS 3.6.B.1 [regarding 16 effective full power years] has not been retained within proposed TSUP 3/4.6.K. The operating limit curves of TSUP Figure 3.6.K-1 shall be adjusted, as required, on the basis of the specimen data and recommendations of Regulatory Guide 1.99, Revision 2 and 10 CFR 50, Appendix H. This information, however, is design details which are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. However, the proposed LCO and SRs provide an adequate level of protection for assuring the reactor coolant system is maintained within plant design limits; thus, existing plant safety margins are not reduced by the relocation of the specific procedural details for the applicability of Figure 3.6.K-1 to administratively controlled methods.

4. CTS 3.6.B.2 is encompassed within TSUP 3.6.K.4, LCO which is based on STS 3.4.6.1.d, LCO. CTS 3.6.B.2 includes explicit design information (temperature of the vessel shell immediately below the flange) as to the location of the temperature indications. TSUP 3.6.K.4 includes industry-accepted parameter distinctions (reactor vessel flange and head flange temperature). CTS 3.6.B.2 includes the specific methodology for performing the surveillance. TSUP 3.6.K.4 provides the key parameters that need to be checked. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59.

5. CTS 3.6.B.2 for Dresden Unit 2 [regarding 80 °F] has been changed to be consistent with CTS Figure 3.6.1. CTS 3.6.B.2 for Dresden is consistent with CTS Figure 3.6.1. Proposed TSUP 3.6.K.4 corrects this discrepancy as the correct value is 100 °F. This is consistent to CTS Figure 3.6.1 and proposed Figure 3.6.K-1 for Dresden Station. The 80 °F minimum boltup temperature within the Unit 2 CTS 3.6.B.2 was consistent for an earlier version of CTS Figure 3.6.1 (DPR-19 Amendment 114). However, ComEd's review of GL 92-01 required an additional revision to CTS Figure 3.6.1 and the associated LCO 3.6.B.2. The revised curves reflecting the 100 °F were approved by the Staff for use with the receipt of DPR-19 Amendment 123; however, the corresponding revision to CTS 3.6.B.2 was inadvertently omitted. ComEd has identified this issue and controls this requirement under administrative measures.

6. CTS 3/4.6.A and CTS 3/4.6.B have been combined into TSUP 3/4.6.K. TSUP 3/4.6.K is based on STS 3/4.4.6. Other issues related to P/T Limits have been discussed in the section above regarding CTS 3/4.6.A.

<u>Surveillance Requirement (SR)</u>

1. CTS 4.6.B.1 is encompassed within TSUP 4.6.K which is based on STS 4.4.6.1.1. This issue has been previously discussed above in CTS 4.6.A, SR Item No. 1 and No 2.

2. CTS 4.6.B.1 [regarding 15 minute intervals and permanent records] is encompassed within TSUP 4.6.K which is based on STS 4.4.6.1.1. This issue has been previously discussed above in CTS 4.6.A, SR Item No 2.

3. CTS 4.6.B.1 [regarding 220 °F and vessel venting] is encompassed with TSUP 3.6.K, Applicability which is based on STS 3.4.6.1, Applicability. In addition, this portion of CTS 4.6.B.1 is encompassed within proposed TSUP SR 4.6.K.4.a. TSUP Mode 4 encompasses "whenever the shell temperature is below 220 °F and the reactor vessel is not vented." TSUP SR 4.6.K.4.a provides a periodicity of every 12 hours to check temperatures and pressures when the coolant temperature is below 130 °F and every 30 minutes when the coolant temperature is below 110 °F. This periodicity ensures that the appropriate parameters on TSUP Figure 3.6.K-1 are adequately reviewed. In addition, the requirement to increase the periodicity to every 30 minutes when the limit is more closely approached has been shown based upon industry experience to provide an adequate level of safety regarding monitoring P/T Limits. CTS 4.6.B.1 does not provide such a delineation. TSUP 4.6.K.4.a includes industry-accepted parameter distinctions and periodicities for surveillance (reactor vessel flange and head flange temperature) that are consistent to TSUP Figure 3.6.K-1. TSUP 4.6.K.4.a provides clear guidance to site operations personnel regarding the key parameters that need to be checked. CTS 4.6.B.1 is not as explicit as TSUP 4.6.K.4.a.

4. CTS 4.6.B.2 for Dresden [CTS 4.6.B.3 for Quad Cities] regarding the recording of temperatures when the reactor vessel head bolting studs are tightened is encompassed within TSUP 4.6.K.4.b which is based on STS 4.4.6.1.4.b. This item has been previously discussed above in Section CTS 3/4.6.A, SR, Item No 5. CTS 4.6.B.2 for Dresden [CTS 4.6.B.3 for Quad Cities] includes explicit design information (temperature of the vessel shell immediately below the head flange) as to the location of the temperature

indications. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. In addition, CTS 4.6.B.2 for Dresden [CTS 4.6.B.3 for Quad Cities] regarding the periodicity of data recordings has been modified in TSUP 4.6.K.4.b to 30 minutes prior to and once per 30 minutes during bolt tensioning. This proposed enhancement from CTS requirements ensures that the temperature requirements are within limits prior and are continuously monitored throughout the bolt tensioning procedure. CTS requirements for recording of the temperature are unclear. The proposed TSUP periodicity requirements have been shown based upon industry experience to be adequate to monitor temperatures during bolt tensioning procedures.

5. CTS 4.6.B.3 for Dresden [CTS 4.6.B.2 for Quad Cities] regarding neutron flux monitors has not been retained within TSUP 3/4.6.K. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59.

6. CTS 4.6.B.3 for Dresden [CTS 4.6.B.2 for Quad Cities] regarding the determination of NDTT has not been retained within TSUP 3/4.6.K. This requirement is encompassed by the 10 CFR 50 Appendix H requirements to periodically generate the curves of TSUP Figure 3.6.K-1. Therefore, retention of a separate requirement to determine the NDTT would be redundant and therefore, inappropriate for inclusion in TSUP. The calculation of the NDTT as part of the regeneration of the curves of TSUP Figure 3.6.K-1 is consistent with industry practice and has been shown to provide and adequate level of protection against reactor vessel brittle fracture concerns.

7. CTS 4.6.B.3 for Dresden [CTS 4.6.B.2 for Quad Cities] regarding samples taken in accordance with 10 CFR 50, Appendix H is encompassed within TSUP 3.6.K, Applicability which is based on STS 4.4.6.1.3. TSUP Table 4.4.6.1.3-1 of STS is not incorporated within TSUP per the guidance given in GL 91-01, "Removal of the Schedule for the Withdrawal of Reactor Vessel Material Specimens from the Technical Specifications." The changes are consistent to those found within the Fort Calhoun Technical Specifications. In addition, STS Section 4.4.6.1.3 (proposed Section 4.6.K.3) has been modified similar to the changes noted in the Fort Calhoun Technical Specifications.

CTS 3/4.6.C Coolant Chemistry

Applicability

1. CTS 3.6.C.1.a for Dresden [during reactor power operation] is encompassed within TSUP 3.6.I and 3.6.J, Applicability, which is based on STS 3.4.4 and 3.4.5, Applicability. TSUP 3.6.I and 3.6.J (Modes 1, 2 and 3) maintains the requirements listed within CTS 3.6.C.1 (during power operation) and conservatively expands power operation to explicitly require Chemistry and Specific Activity limits in TSUP Mode 3 (HOT SHUTDOWN) as discussed below.

2. TSUP 3.6.I, Applicability for Chemistry, deviates from STS 3.4.4, Applicability. STS

3.4.4, Applicability specifies "At all times." whereas TSUP 3.6.I, Applicability specifies Modes 1, 2[(a)] and 3[(a)]. TSUP 3.6.I, footnote (a) further specifies, "The provisions of 3.0.D are not applicable during unit shutdown when entering OPERATIONAL MODE(s) 2 and 3 from OPERATIONAL MODE 1." As discussed above, CTS 3.6.C.1.a for Dresden specifies Coolant Chemistry limits during reactor power operation. Reactor power operation is encompassed within TSUP Modes 1 and 2. TSUP 3.6.I conservatively expands these applicability requirements to include Mode 3 (HOT SHUTDOWN). CTS 4.6.C.1.c for Dresden also specifies additional analyses to be performed until the reactor is in a cold shutdown condition; thus encompassing Modes 1, 2 and 3 which is consistent with the proposed TSUP applicability requirements. CTS 4.6.C.1.c for Quad Cities specifies that certain analyses be performed within 24 hours of any reactor startup. CTS 4.6.C.1.c for Quad Cities is encompassed within TSUP 3.6.I and 3.6.J, Applicability which includes TSUP Mode 2. TSUP Mode 2 is the mode of operation during a plant startup. TSUP 3.6.I, footnote (a) clarifies the limitations presented by TSUP 3.0.D that restrict entry into a MODE unless the requirements necessary for entering that MODE are satisfied. TSUP 3.6.I, footnote (a) conservatively allows the plant to bypass this restriction when reactor Chemistry limitations cannot be met.

3. TSUP 3.6.J, Applicability for Specific Activity, deviates from STS 3.4.5, Applicability. STS 3.4.5, Applicability specifies Modes 1, 2, 3 and 4 whereas TSUP 3.6.J, Applicability specifies Modes 1, 2 and 3. OPERATIONAL MODE 4 is not included in TSUP 3.6.J because there is no pressure or steam force to transport activity beyond the reactor vessel. The proposed requirements are consistent to current plant requirements, do not adversely affect existing plant safety margins and are consistent with the guidance provided in the BWR Improved Standard Technical Specifications.

Actions

1. Proposed TSUP 3.6.I, Action 1.a is rewritten to more clearly define when the applicable chemistry condition does not need to be reported to the Commission. The proposed action does not alter the STS requirements. The proposed requirements allow minor deviations from plant chemistry limits if such deviations are controlled within appropriate levels. For longer term chemistry excursions, the Actions of TSUP 3.6.I, Action 1.b would apply during MODE 1. The proposed Action requirements are consistent with industry practice and are new additional Actions for Dresden and Quad Cities Station. In addition, per GL 87-09, the reference within STS 3.4.4, Action a to the provisions of 3.0.4 not being applicable has not been retained within proposed TSUP 3.6.I, Actions.

2. Proposed TSUP 3.6.J, Action 3 is modified from the STS by adopting the LaSalle specifications because the STS 3.4.5, Action c is not applicable to the Dresden or Quad Cities design. LaSalle has a similar design to Dresden and Quad Cities and therefore, the specifications are applicable. Dresden and Quad Cities proposes including a 20% power change action requirement (vs. 15% in STS) to be consistent with current plant requirements. TSUP 3.6.J, Action 3 also deviates from STS by specifying the location of the offgas level measurements as "prior to the holdup line" as compared to STS "at the SJAE." This deviation from STS requirements is consistent with the system design for Dresden and Quad Cities Stations regarding the measurement of specific activity. In addition, STS footnote '*' is only applied to initial plant startup programs and is not

applicable to Dresden and Quad Cities Stations.

3. STS 3.4.4, Action c has not been included within proposed TSUP 3.6.I, Actions. The proposed Actions are applicable for Modes 1, 2 and 3. STS 3.4.4, Action c lists the requirements for all other times. As previously discussed, CTS 3.6.C.1.a for Dresden specifies Coolant Chemistry limits during reactor power operation. Reactor power operation is encompassed within TSUP Modes 1 and 2. TSUP 3.6.I conservatively expands these applicability requirements to include Mode 3 (HOT SHUTDOWN). CTS 4.6.C.1.c for Dresden also specifies additional analyses to be performed until the reactor is in a cold shutdown condition; thus encompassing Modes 1, 2 and 3 which is consistent with the proposed TSUP applicability requirements

4. TSUP 3.6.I, Action 1.b deviates from STS 3.4.4, Action b by specifying in the event the applicable chemistry limits cannot be maintained be in STARTUP within the next 8 hours as compared to STS specifying 6 hours. Eight hours provides a more reasonable period of time in which to perform an orderly change of MODES from RUN to STARTUP. The proposed eight hours is consistent with other Action requirements proposed within TSUP. The level of safety is not significantly reduced by allowing an additional two (2) hours to make an orderly mode change.

5. TSUP 3.6.J Actions deviate from STS 3.4.5, Actions with regards to reports to the Commission and the specific information to include in such reports. The reporting requirements for iodine spiking and the reporting requirements and shutdown actions for cumulative operating time at specific activity levels above the required limits have not been incorporated within TSUP as recommended in Generic Letter 85-19, "Reporting Requirements on Primary Coolant Iodine Spikes," dated September 27, 1985. As discussed in GL 85-19, the quality of nuclear fuel has been greatly improved such that the resultant normal coolant iodine activity (i.e., absence of iodine spiking) is well within the limit. Appropriate actions would be initiated long before accumulating 800 hours above the iodine activity limit. In addition, 10 CFR 50.72 requires the NRC staff be immediately notified of fuel cladding failures that exceed expected values or that are caused by unexpected factors. Therefore, this requirement is unnecessary on the basis that proper fuel management and existing reporting requirements should preclude ever approaching the limit. The proposed TSUP requirements are consistent with CTS requirements and do not reduce existing plant safety margins.

6. Proposed TSUP 3.6.I, Actions regarding the summation of conductivity and chloride limits (72 hours during one continuous time interval and 336 hours per year) are new requirements for Dresden and Quad Cities. These Actions provide additional restrictions to ensure that the cumulative effects of chloride, conductivity or pH parameters are maintained within limits. The proposed requirements have been shown based upon industry experience to provide an adequate level of protection for monitoring moderator chemical properties that affect the reactor coolant pressure boundary.

7. It should be noted that for a more complete discussion of proposed TSUP 3/4.6.I, Actions and 3/4.6.J Actions, see the discussion provided below in LCO, Items No. 3, 4, 7 and 9.

ATTACHMENT B

Limiting Condition for Operation (LCO)

1. CTS 3.6.C.1 for Quad Cities and CTS 3.6.C.1.a for Dresden is encompassed within TSUP 3.6.J, LCO which is based on STS 3.4.5, LCO. CTS 3.6.C.1 for Quad Cities has been reduced from 5 µCi/gram to 0.2 µCi/gram DOSE EQUIVALENT I-131. CTS 3.6.C.1.a for Dresden maintains 0.2 µCi/gram as the LCO. Therefore, the proposed TSUP requirements either maintain or are more conservative than current requirements.

2. CTS 3.6.C.1.a for Dresden [during reactor power operation] is encompassed within TSUP 3.6.I and 3.6.J, Applicability which is based on STS 3.4.4 and 3.4.5, Applicability. TSUP 3.6.I and 3.6.J (Modes 1, 2 and 3) maintain the requirements listed within CTS 3.6.C.1 (during power operation) and conservatively expand power operation to explicitly require Chemistry and Specific Activity limits in TSUP Mode 3 (HOT SHUTDOWN).

3. CTS 3.6.C.1.b for Dresden is encompassed within TSUP 3.6.J, Action 1 which is based on STS 3.4.5, Action a.2. CTS 3.6.C.1.b for Dresden specifies that with the reactor coolant activity > 0.2 µCi/gram but ≤ 4.0 µCi/gram for > 48 continuous hours, an orderly shutdown shall be immediately initiated. TSUP 3.6.J, Action 1 maintains the equivalent requirement. It should be noted that the proposed Actions are new requirements for Quad Cities, applicable to the Quad Cities plant design, which have been shown based upon experience at Dresden Station, to provide an adequate level of protection regarding the disposition of reactor coolant activity concerns.

4. CTS 3.6.C.1.b for Dresden [regarding "immediately"] is encompassed within TSUP 3.6.J, Action 1 which is based on STS 3.4.5, Action 2. TSUP 3.6.J, Action 1 requires the plant to be brought to HOT SHUTDOWN conditions with the MSIVs closed within 12 hours. The CTS term "immediately" is unclear and may be difficult to achieve. The proposed TSUP Action requirements have been shown based upon industry experience to be adequate to place the plant in the appropriate OPERATIONAL MODE for which reactor coolant activity concerns are negligible. CTS 3.6.C.1.b for Dresden also requires that the reactor be in cold shutdown within 24 hours. TSUP 3.6.J, Action 1 specifies that the plant be HOT SHUTDOWN within 12 hours and the MSIVs closed. The requirement to place the plant in HOT SHUTDOWN within 12 hours conservatively ensures the plant be brought out of the power operating region in an expeditious time frame. In addition, TSUP 3.6.J, Action 1 specifies that the MSIVs be closed if reactor coolant activity levels cannot be maintained within limits. Closing the MSIVs is a new conservative requirement, applicable to the Dresden and Quad Cities plant designs, which prevents the release of activity to the environs should a steam line rupture occur outside containment. The associated surveillance requirements provide adequate assurance that excessive specific activity levels in the reactor coolant will be detected in sufficient time to take corrective action.

5. CTS 3.6.C.1.c for Dresden is encompassed within TSUP 3.6.J, Actions 1 and 2, which are based on STS 3.4.5, Action a.2. TSUP 3.6.J, Actions conservatively eliminate the action allowance to perform a second sample analysis within 8 hours if the initial sample shows activity > 4 µCi/gm. TSUP 3.6.J, Action 1 specifies that the plant be in HOT SHUTDOWN within 12 hours and the MSIVs closed. The requirement to place the plant in HOT SHUTDOWN within 12 hours conservatively ensures that the plant is brought

out of the power operating region in an expeditious time frame. In addition, TSUP 3.6.J, Action 1 specifies that the MSIVs be closed if reactor coolant activity levels cannot be maintained within limits. Closing the MSIVs is a new conservative requirement, applicable to the Dresden and Quad Cities plant designs, which prevents the release of activity to the environs should a steam line rupture occur outside containment.

6. CTS 3.6.C.2 is encompassed within TSUP 3.6.I, LCO which is based on STS 3.4.4, LCO. TSUP 3.6.I, LCO references to TSUP Table 3.6.I-1, "Reactor Coolant System Chemistry Limits." TSUP Table 3.6.I-1 specifies chloride and conductivity limits in MODE 1 as ≤0.2 ppm and 1.0 µmhos/cm, respectively. In MODES 2 and 3, TSUP Table 3.6.I-1 specifies chloride and conductivity limits as ≤0.1 ppm and 2.0 µmhos/cm, respectively. CTS 3.6.C.2 discusses the applicability as when steaming rates are less than 100,000 pounds per hour. Therefore, the CTS applicability is equivalent to TSUP MODES 2 and 3; thus the applicability TSUP conductivity and chloride limits in MODES 2 and 3 are equivalent to CTS requirements. TSUP Table 3.6.I-1 also includes pH limits not currently contained within the TS for Dresden or Quad Cities. The proposed pH limits are applicable to the Dresden and Quad Cities plant designs which have been shown based upon industry experience to provide an adequate level of protection regarding the control of pH within the reactor coolant.

7. CTS 3.6.C.3 is encompassed within TSUP 3.6.I, Action 2 which is based on STS 3.4.4, Action b. CTS 3.6.C.3 provides an allowance to exceed the normal conductivity and chloride limits during the first 24 hours following a reactor startup. TSUP 3.6.I, Action 2 allows a 48 hour time period. During reactor startups, the dissolved oxygen content of the reactor coolant water could be higher than during normal conditions. CTS requirements limit the conductivity to 10 µmhos/cm during this period. However, CTS requirements place a more restrictive limit on the chloride concentration (0.1 ppm) to assure the adverse chloride-oxygen combinations are not exceeded. At higher power levels and corresponding higher levels of steam production, boiling occurs causing deaeration of the reactor water, thus ensuring oxygen concentration levels are maintained at low levels. The equivalent TSUP requirements within proposed Table 3.6.I-1, specify in MODES 2 and 3 (equivalent to CTS reactor startups) that the conductivity and chloride limits be ≤2.0 µmhos/cm and ≤0.1 ppm, respectively. Although the proposed TSUP requirements include an extended period of time to be above the limits, the proposed limits are more restrictive than CTS requirements; therefore, the proposed TSUP requirements provide an adequate level of protection. If the TSUP action levels cannot be maintained, the plant is required to be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours. The proposed TSUP Actions are consistent with those discussed above in CTS 3.6.C.1.b for Dresden Station

8. CTS 3.6.C.3 [regarding 24 hours after power operating condition] is encompassed within TSUP 3.6.I, Applicability which is based on STS 3.4.4, Applicability. The specific allowance of different conductivity/chloride limits during reactor startups is more clearly defined as OPERATIONAL MODES within TSUP. As discussed above, TSUP Table 3.6.I-1, MODES 2 and 3 (MODE 1 also, if applicable) maintain an equivalent level of safety when compared to CTS 3.6.C.3 requirements regarding 24 hours after power operations.

9. CTS 3.6.C.4 is encompassed within TSUP 3.6.I, Action 1 which are based on STS 3.4.4, Action a. Dresden CTS 3.6.C.4 specifies during periods of operations with steaming rates greater than 100,000 pounds/hour, conductivity and chloride levels shall be below 5 µmhos/cm and 0.5 ppm, respectively. For Quad Cities CTS 3.6.C.4, the conductivity and chloride levels shall be below 10 µmhos/cm and 1.0 ppm, respectively. The CTS applicability is approximately equivalent to TSUP MODE 1. Proposed TSUP Table 3.6.I-1, Mode 1 requirements for conductivity and chloride are 1.0 µmhos/cm and 0.2 ppm, respectively. Therefore, the applicable TSUP conductivity and chloride limits in MODE 1 are more restrictive when compared to CTS requirements. TSUP Table 3.6.I-1 also includes pH limits not currently contained within the TS for Dresden or Quad Cities. The proposed pH limits are applicable to the Dresden and Quad Cities plant designs which have been shown based upon industry experience to provide an adequate level of protection regarding the control of pH within the reactor coolant.

10. CTS 3.6.C.5 is encompassed within TSUP 3.6.I, Actions which are based on STS 3.4.4, Actions. CTS 3.6.C.5 does not explicitly include time requirements or a final mode of operation in the event Chemistry or Specific Activity limits are exceeded. The proposed TSUP terminal Action requirements for Chemistry and Specific Activity specify that the reactor be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.

11. On-line monitoring capability at Dresden and Quad Cities Station eliminates the requirements to monitor for the average disintegration energy (STS 3.4.5.b, LCO; STS Table 4.4.5-1, Item 3). These requirements are out-dated and are not contained within the current Dresden and Quad Cities Technical Specifications. Therefore, no changes are proposed to any safety analysis assumptions with the proposed modifications to STS guidelines.

Surveillance Requirement (SR)

1. CTS 4.6.C.1.a [regarding 96 hours] is encompassed within TSUP 4.6.J, Table 4.6.J-1 which is based on STS 4.4.5, Table 4.4.5-1. TSUP 4.6.J, Table 4.6.J-1 requires the determination of gross beta and gamma activity once per 72 hours which is more conservative than the once per 96 hour analysis required by CTS 4.6.C.1.a. TSUP 4.6.J, Table 4.6.J-1 specifies an isotopic analysis for DOSE EQUIVALENT I-131 every 31 days whereas this requirement is encompassed within CTS 4.6.C.1.a every 96 hours. However, the proposed TSUP requirements have been shown based on industry experience to provide an adequate level of protection for detecting potential degradation for specific activity within the reactor coolant boundary. The proposed increased TSUP surveillance frequency (72 hours v. CTS 96 hours) ensures that gross beta/gamma activity is detected in a more timely manner than is currently required. Gross increases in beta or gamma activity should act as a precursor to any potential DOSE EQUIVALENT I-131 anomalies. Thus, the TSUP allowance for determining DOSE EQUIVALENT I-131 every 31 days when compared to every 96 hours as required by CTS has an insignificant impact on plant safety.

2. CTS 4.6.C.1.a for Quad Cities regarding an increase in chimney monitoring indications is encompassed within proposed TSUP 4.6.J, Table 4.6.J-1 which is based on STS 4.4.5,

Table 4.4.5-1. CTS 4.6.C.1.a for Quad Cities specifies that during steady state operation, with an indicated increase of 25% or 5000 µCi/sec, whichever is greater, of radioactive effluents, obtain a coolant sample and analyze for iodines. Proposed TSUP 3.6.J, Action 3 specifies that additional sampling should be taken during power changes of greater than 20% in a one hour period (Action 3.a), or offgas changes in a one hour period greater than 25,000 µCi/sec when operating below 100,000 µCi/sec (Action 3.b), or offgas changes in a one hour period of greater than 15% when operating above 100,000 µCi/sec (Action 3.c). TSUP 3.6.J, Action 3.a (perform sampling after power changes of 20%) is a new requirement, consistent with current plant practices. TSUP Actions 3.b and 3.c that incorporate the 100,000 µCi/sec threshold for increasing sampling frequency is based upon the precedence found in the LaSalle County Technical Specifications. CTS 4.6.C.1.a for Quad Cities is unclear as it does not provide a time of reference for which the limits are applicable. TSUP Action 3 provides explicit guidance to site operations personnel by specifying the limits within a one hour period. The proposed combination of TSUP Actions 3.a, 3.b and 3.c, taken as a whole, when compared against CTS 4.6.C.1.a for Quad Cities provide an equivalent level of protection.

3. CTS 4.6.C.1.b for Quad Cities regarding a monthly isotopic analysis is encompassed within TSUP 4.6.J, Table 4.6.J-1 which is based on STS 4.4.5, Table 4.4.5-1. TSUP 4.6.J, Table 4.6.J-1, Item No. 2 and Item No. 4 require analysis every 31 days for DOSE EQUIVALENT I-131 and Xe-133, Xe-135 and KR-88. The proposed TSUP requirements provide explicit guidance to site operations personnel by clearly specifying the frequency of the surveillance (once per 31 days).

4. CTS 4.6.C.1.b for Dresden regarding isotopic analysis results greater than 0.2 microcuries per gram is encompassed within TSUP 3.6.J, Action 2 and 4.6.J which are based on STS 3.4.5, Actions and 4.4.5, respectively. Proposed TSUP 3.6.J, Action 2 specifies (also references TSUP Table 4.6.J-1) that with specific activity greater than 0.2 microcuries/gm, perform an analysis once per 4 hours until the limit is restored. CTS 4.6.C.1.b for Dresden requires the equivalent surveillance 3 times every 24 hours (i.e., every 8 hours). Therefore, the proposed TSUP SR periodicity has been increased from 8 to 4 hours which has been shown based on industry experience to provide an adequate level of protection for monitoring plant specific activity in the reactor coolant.

5. CTS 4.6.C.1.c for Quad Cities regarding sampling 24 hours prior to reactor startups when steady-state iodine concentrations are greater than 1% but less than 10% (0.05 µCi/gm but less than 0.5 µCi/gm) of CTS 3.6.C.1 for Quad Cities (5 µCi/gm), is encompassed within TSUP 3.6.J, Actions which are based on STS 3.4.5, Actions. The proposed TSUP 3.6.J, LCO specifies that specific activity shall be limited to 0.2 µCi/gm DOES EQUIVALENT I-131. CTS 4.6.C.1.c for Quad Cities is unclear as it places a limit on specific activity prior to reactor startup that is based upon previous levels of activity. The proposed requirements (0.2 µCi/gm) are less conservative than the lower CTS limit (0.05 µCi/gm) but more conservative than the higher CTS limit (0.5 µCi/gm); therefore, the proposed deviation from CTS requirements has a negligible impact and does not significantly reduce existing plant safety margins.

   The CTS requirement to ensure the affected limits are within acceptance levels prior to performing a MODE change is encompassed within TSUP 4.0.D which does not allow a change of MODE unless the SR requirements for that MODE have been performed.

6. CTS 4.6.C.1.c for Dresden regarding sampling reactor coolant activity levels greater than 4 µCi/gm DOSE EQUIVALENT I-131 is encompassed within TSUP 3.6.J, Action 1, which is based on STS 3.4.5, Action a. TSUP 3.6.J, Action 1 specifies that if the specific activity is greater than 4 µCi/gm, the reactor shall be in HOT SHUTDOWN within 12 hours with the MSIVs closed. The requirement to place the plant in HOT SHUTDOWN within 12 hours conservatively ensures the plant be brought out of the power operating region in an expeditious time frame. In addition, TSUP 3.6.J, Action 1 specifies that the MSIVs be closed if reactor coolant activity levels cannot be maintained within limits. Closing the MSIVs is a new requirement, applicable to the Dresden and Quad Cities plant designs, which prevents the release of activity to the environs should a steam line rupture occur outside containment. The CTS requirements of performing sampling during the plant shutdown have not been retained within TSUP 4.6.J. The proposed requirements are consistent with industry practice and have been shown to provide an adequate level of protection for monitoring specific activity levels within the reactor coolant.

7. CTS 4.6.C.1.d for Quad Cities regarding sampling when iodine concentrations are greater than 0.5 µCi/gm is encompassed within TSUP 3.6.J, Actions 1 and 2 which are based on STS 3.4.5, Actions. The proposed TSUP Actions are limited within the range of 0.2 to 4.0 µCi/gm. Therefore, TSUP Actions provide a greater range of specific activities for which enhanced monitoring is required. In addition, in the event that specific activity is within the range of 0.2 to 4.0 µCi/gm, analysis is required every 4 hours. If the level is greater than 4.0 µCi/gm, the reactor is required to be brought to HOT SHUTDOWN conditions and the MSIVs closed within 12 hours. CTS 4.6.C.1.d only specifies that a sample be taken prior to a reactor startup. CTS 4.6.C.1.d does not specify a similar surveillance periodicity nor does CTS 4.6.C.1.d specify terminating action requirements in the event that the specific activity limits cannot be restored.

8. CTS 4.6.C.2 is encompassed within TSUP 4.6.I.2 and 4.6.I.3, which are based on STS 4.4.4.b and 4.4.4.c. CTS 4.6.C.2 specifies applicability to be when steaming rates are below 100,000 pounds/hour. The CTS applicability is approximately equivalent to TSUP MODES 2 and 3. CTS 4.6.C.2 requires analysis of conductivity and chloride every 4 hours in this mode of operation. Proposed TSUP SR 4.6.I.2 requires an analysis of chlorides or conductivity every 72 hours. In addition, TSUP 4.6.I.3 requires the continuous recording of the conductivity of the reactor coolant. In the event that the continuous monitor is inoperable, then in-line measurements are required every 4 hours. The proposed TSUP SR frequencies provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action. In addition, as previously discussed, the proposed TSUP LCO requirements are more limiting than currently specified in the CTS. Therefore, the proposed TSUP SR frequency has been demonstrated based upon industry experience to adequately monitor plant Chemistry limits and does not significantly reduce existing plant safety margins for Dresden or Quad Cities Stations.

9. CTS 4.6.C.3.a is encompassed within TSUP 4.6.I.2 and 4.6.I.3 which are based on STS 4.4.4.b and 4.4.4.c, respectively. CTS 4.6.C.2 specifies applicability to be when steaming

rates are greater than 100,000 pounds/hour. The CTS applicability is approximately equivalent to TSUP MODES 1 and 2. CTS 4.6.C.3.a requires analysis of chloride and conductivity levels every 96 hours in this mode of operation. In addition, CTS 4.6.C.3.a specifies an analysis every 96 hours when the continuous conductivity monitor indicates abnormal readings (other than spikes). Proposed TSUP SR 4.6.I.2 requires an analysis of chlorides or conductivity every 72 hours. In addition, TSUP 4.6.I.3 requires the continuous recording of the conductivity of the reactor coolant. In the event that the continuous monitor is inoperable, then in-line measurements are required every 4 hours (every 24 hours otherwise). The proposed TSUP SR frequencies provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

10. CTS 4.6.C.3.b is encompassed within TSUP 4.6.I.3 which is based on STS 4.4.4.c. CTS 4.6.C.3.b requires a daily analysis of chloride and conductivity levels with the continuous conductivity monitor inoperable. Proposed TSUP 4.6.I.3 specifies an in-line conductivity measurement once every 4 hours when the continuous conductivity monitor is inoperable. The CTS and proposed TSUP requirements are equivalent with regards to conductivity measurements. The proposed TSUP requirements do not specify an enhanced chloride frequency with an inoperable continuous conductivity monitor. The relationship between the continuous conductivity monitor and chloride levels is irrelevant and as such, has not been retained within TSUP 4.6.I. The proposed requirements are consistent to industry practice which have been shown to provide an adequate level of protection for monitoring conductivity levels with an inoperable continuous conductivity monitor.

11. STS 4.4.4.b.3(a) includes a requirement to analyze pH at least once per 72 hours. This SR was not adopted in the proposed specifications. Accurate measurement of pH is very difficult unless the conductivity is greater than 1 µmhos/cm. Both Dresden and Quad Cities routinely operate with conductivity values less than 0.1µmhos/cm. Therefore the requirement to routinely monitor pH is not adopted but the requirement for measuring pH when the conductivity value is outside the appropriate limit in the specification is retained. Thus, pH will be used as a diagnostic parameter for interpreting severe water chemistry transients at Dresden and Quad Cities.

12. TSUP 4.6.I.1 [measuring chemistry limits no greater than 72 hours prior to a reactor startup] and 4.6.I.4 [CHANNEL CHECKS of the continuous conductivity monitor] are new SRs not included in the CTS. TSUP 4.6.I.1 provides an additional assurance that the plant will not be brought to power conditions with chemistry limits above accepted levels. TSUP 4.6.I.4 ensures that the conductivity monitor is periodically checked to ensure that the monitor is OPERABLE. These additional SRs are consistent to current industry practices and provide an added level of protection for plant chemistry concerns.

ATTACHMENT B

CTS 3/4.6.D Coolant Leakage

CTS 3/4.6.D, "Coolant Leakage," is encompassed within proposed TSUP 3/4.6.G, "Leakage Detection Systems," and TSUP 3/4.6.H, "Operational Leakage." TSUP 3/4.6.G is based on STS 3/4.4.3.1. TSUP 3/4.6.H is based on STS 3/4.4.3.2.

Applicability

1. CTS 3.6.D.1 [regarding any time fuel in the vessel and temperature greater than 212 °F] is encompassed within TSUP 3.6.G and 3.6.H, Applicability which is based on STS 3.4.3.1 and 3.4.3.2, Applicability. The aforementioned MODES are consistent with TSUP MODES 1, 2 and 3. The proposed TSUP 3.6.G and 3.6.H, Applicability specifies MODES 1, 2 and 3. Therefore, the CTS and TSUP requirements are equivalent.

Actions

1. CTS 3.6.D.1 [regarding actions] for Dresden is encompassed within TSUP 3.6.H, Actions which are based on STS 3.4.3.2, Actions. CTS 3.6.D.1 specifies that the reactor be brought to cold shutdown conditions within 24 hours if the Coolant Leakage limits cannot be maintained. Proposed TSUP 3.6.H, Action 1 specifies that with any PRESSURE BOUNDARY LEAKAGE, bring the reactor to HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours. PRESSURE BOUNDARY LEAKAGE is a new requirement not currently included in the CTS. The proposed Actions ensure that the plant is placed in a safe condition in an expeditious time frame comparable to CTS. Proposed TSUP 3.6.H, Action 2 specifies that with UNIDENTIFIED LEAKAGE rates greater than the limits, restore the limits within 4 hours or bring the reactor to HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours. As previously discussed, the proposed TSUP requirements provide more limiting and explicit LCO requirements than CTS specifies. The proposed allowed-outage-time (AOT) of 4 hours is consistent with industry practice for restoring leakage rates to within limits and has been shown to provide an adequate level of protection for monitoring leakage to within acceptable levels. Proposed TSUP 3.6.H, Action 3 requires that if TSUP LCO 3.6.H.4 cannot be met, determine if the source of leakage is IGSCC susceptible material. An UNIDENTIFIED LEAKAGE increase of more than 2 gpm within a 24 hour period is an indication of a potential flaw in the reactor coolant pressure boundary and must be quickly evaluated. Although the increase does not necessarily violate the absolute UNIDENTIFIED LEAKAGE limit, IGSCC susceptible components must be determined not to be the source of the leakage within the required completion time. Proposed TSUP 3.6.H, Action 3 is a new requirement for Dresden and Quad Cities that is consistent with the guidance specified in GL 88-01 for IGSCC.

2. Section 3.4.3.2, Actions c and d within STS for this section has not been included within the proposed amendment request. These requirements are not included within the current Technical Specifications for Dresden and Quad Cities as system/equipment design is not applicable to the STS requirements.

3. Section 3.4.3.2, Action e within STS is proposed as Action 3 within the proposed amendment request. The proposed amendment request follows the precedence set at

River Bend Station. These requirements are applicable to the Dresden and Quad Cities Stations and have been approved by the NRC staff for River Bend.

4. STS 3.4.3.1, Actions have not been incorporated within proposed TSUP 3.6.G, Actions. The STS Actions are not applicable to the Dresden or Quad Cities plant designs. The proposed TSUP Actions are based on plant-specific equipment and the associated allowed-outage-times (AOT) and action requirements reflect those plant-specific details. CTS 3.6.D.2 for Quad Cities and CTS 3.6.D.3 for Dresden Unit 3 is encompassed within TSUP 3/4.6.G, "Leakage Detection Systems." The CTS allowed-outage-time (AOT) of 7 days has been conservatively reduced to 24 hours within proposed TSUP 3.6.G, Action 1. The proposed requirements ensure that leakage detection requirements are adequately maintained for Dresden or Quad Cities Stations.

5. The STS action for inoperable leakage detection is separated into two distinct actions for inoperable systems. The first action would allow operation for 24 hours with the primary containment atmosphere sampling system inoperable. The second action would allow continued operation for up to 24 hours with the drywell floor drain sump system inoperable. Proposed Action 1 provides an equivalent level of protection as compared to the STS guidelines and is necessary due to the design limitations of the systems at Dresden and Quad Cities Stations. The proposed action has been previously approved for River Bend.

Limiting Condition for Operation (LCO)

1. CTS 3.6.D.1 [regarding any time fuel in the vessel and temperature greater than 212 °F] is encompassed within TSUP 3.6.G and 3.6.H, Applicability which is based on STS 3.4.3.1 and 3.4.3.2, Applicability. The aforementioned MODES are consistent to TSUP MODES 1, 2 and 3. The proposed TSUP 3.6.G and 3.6.H, Applicability specifies MODES 1, 2 and 3. Therefore, the CTS and TSUP requirements are equivalent.

2. CTS 3.6.D.1 [regarding 5 gpm from unidentified sources] is encompassed within TSUP 3.6.H.3, LCO which is based on STS 3.4.3.2.b, LCO. TSUP 3.6.H.3, LCO specifies that UNIDENTIFIED LEAKAGE shall be less than or equal to 5 gpm. Therefore, the CTS and TSUP requirements are equivalent.

3. CTS 3.6.D.1 [regarding 25 gpm total leakage] is encompassed within TSUP 3.6.H.2, LCO which is based on STS 3.4.3.2.c, LCO. TSUP 3.6.H.2, LCO specifies that reactor coolant system leakage shall be limited to less than or equal to 25 gpm averaged over any 24 hour surveillance period. CTS 3.6.D.1 only specifies that total leakage shall not exceed 25 gpm. STS 3.4.3.2.c, LCO specifies that the total leakage shall be less than 25 gpm averaged over any 24-hour period. However, TSUP 3.6.H.4, LCO provides additional restrictions that limit additional increases in UNIDENTIFIED LEAKAGE of greater than or equal to 2 gpm when averaged over a 24-hour period. This additional restriction ensures new leakages to the reactor coolant system are discovered and appropriate correction actions initiated when compared to CTS requirements. Therefore, the proposed TSUP requirements provide more concise guidance to site operations personnel and provide clear requirements for defining the LCO when compared to CTS requirements. The minor deviation from STS requirements ensures that an appropriate

and conservative "rolling" 24 hour is used for determining the limit.

4. CTS 3.6.D.1 [regarding actions] for Dresden is encompassed within TSUP 3.6.H, Actions which are based on STS 3.4.3.2, Actions. CTS 3.6.D.1 specifies that the reactor be brought to cold shutdown conditions within 24 hours if the Coolant Leakage limits cannot be maintained. Proposed TSUP 3.6.H, Action 1 specifies that with any PRESSURE BOUNDARY LEAKAGE, bring the reactor to HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours. PRESSURE BOUNDARY LEAKAGE is a new requirement not currently included in the CTS. The proposed Actions ensure that the plant is placed in a safe condition in time frame comparable to CTS. Proposed TSUP 3.6.H, Action 2 specifies that with UNIDENTIFIED LEAKAGE rates greater than the limits, restore the limits within 4 hours or bring the reactor to HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours. As previously discussed, the proposed TSUP requirements provide more limiting and explicit LCO requirements than CTS specifies. The proposed allowed-outage-time (AOT) of 4 hours is consistent with industry practice for restoring leakage rates to within limits and has been shown to provide an adequate level of protection for monitoring leakage to within acceptable levels. Proposed TSUP 3.6.H, Action 3 requires that if TSUP LCO 3.6.H.4 cannot be met, determine if the source of leakage is IGSCC susceptible material. An UNIDENTIFIED LEAKAGE increase of more than 2 gpm within a 24 hour period is an indication of a potential flaw in the reactor coolant pressure boundary and must be quickly evaluated. Although the increase does not necessarily violate the absolute UNIDENTIFIED LEAKAGE limit, IGSCC susceptible components must be determined not to be the source of the leakage within the required completion time. Proposed TSUP 3.6.H, Action 3 is a new requirement for Dresden and Quad Cities that is consistent with the guidance specified in GL 88-01 for IGSCC.

5. CTS 3.6.D.2 for Dresden Unit 2 has not been retained within TSUP 3/4.6.H. Proposed TSUP 3.6.H, Action 3 encompasses the concerns for IGSCC. CTS 3.6.D.2 provides specific details regarding surveillance methodologies which are inappropriate for inclusion within the Technical Specifications. Such details are more appropriate for inclusion within plant procedures to be controlled under the provisions of 10 CFR 50.59.

6. CTS 3.6.D.2 for Quad Cities and CTS 3.6.D.3 for Dresden Unit 3 is encompassed within TSUP 3/4.6.G, "Leakage Detection Systems." The CTS allowed-outage-time (AOT) of 7 days has been conservatively reduced to 24 hours within proposed TSUP 3.6.G, Action 1. The proposed requirements ensure that leakage detection requirements are adequately maintained for Dresden and Quad Cities Stations.

7. CTS 3.6.D.3 for Quad Cities is encompassed within TSUP 3.6.H, Actions which are based on STS 3.4.3.2, Actions. This issue has been previously discussed above in CTS 3/4.D, LCO, Item No. 4.

8. Proposed TSUP 3.6.H.4, LCO follows the precedence of River Bend. These requirements limit the increase in leakage into the containment to a maximum of 2 gpm of UNIDENTIFIED LEAKAGE within any 24-hour period while in OPERATIONAL MODE 1. UNIDENTIFIED LEAKAGE is new leakage above and beyond normal unidentified leakage currently identified as baseline for the plant. This limit applied exclusively to

MODE 1 which provides needed flexibility during MODE 2 when leakage rates are increasing to normal baseline levels experienced in MODE 1. Without the revised applicability adopted by River Bend and by TSUP, reactor operation could not reach MODE 1.

9. STS LCO requirement 3.4.3.2.d on leakage limits from any reactor coolant system pressure isolation valve and the associated actions are not adopted within the proposed specification. The NRC issued Generic Letter 87-06, Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves, to verify that each licensee contains methods of assuring the leak-tight integrity of all pressure isolation valves. In response to the Generic Letter, Dresden and Quad Cities Stations outlined the methods currently implemented for assuring the leak-tight integrity of all the pressure isolation valves as independent barriers of the reactor coolant systems. Neither Dresden nor Quad Cities designs includes high pressure to low pressure interface valve leakage pressure monitors. Therefore, both Dresden and Quad Cities utilize other existing instrumentation for determination of leakage through a pressure boundary isolation valve. A detailed listing of the compensatory requirements was submitted to the NRC on June 11, 1987. As a result of the detailed review of the subject and the design limitations at Dresden and Quad Cities, the STS LCO for reactor coolant system pressure isolation valve leakage limits are not adopted within the proposed Technical Specifications. Additionally, STS 3.4.3.2 Action c is not adopted for the same reasons.

10. Table 3.4.3.2-1 of STS is not included within the proposed amendment. This follows the guidelines specified in GL 91-08 that allows the deletion of Tables of component lists if the lists are administratively maintained outside of the Technical Specifications. These changes are in keeping with the current requirements for both Dresden and Quad Cities Stations and do not affect any accident analysis assumptions for the site.

11. TSUP 3.6.H.1, LCO is a new requirement for Dresden and Quad Cities, based on STS 3.4.3.2.a, LCO. PRESSURE BOUNDARY LEAKAGE is a new requirement not currently included in the CTS and is defined as leakage through a non-isolable fault in a reactor coolant system component body, pipe wall or vessel wall. The proposed requirements are consistent with current industry practice, applicable to the Dresden and Quad Cities plant designs, and have been shown to provide an adequate level of protection regarding plant operational leakage.

<u>Surveillance Requirement (SR)</u>

1. CTS 4.6.D for Quad Cities (Dresden Unit 2) and 4.6.D.1 for Dresden Unit 2 [regarding checking by the sump and air sampling system] is encompassed within TSUP 4.6.G. TSUP 4.6.G.1 also references TSUP 4.6.H.1 and 4.6.H.2. TSUP 4.6.G did not adopt the requirements from STS 4.4.3.1 due to the plant-specific designs of the leakage detection systems at Dresden and Quad Cites Stations. The proposed requirements are consistent with the CTS requirements and ensure that the systems necessary to monitor and quantify plant operational leakage are adequately maintained. In addition, TSUP 4.6.G provides clearer guidance to site operations personnel by specifically requiring a demonstration of OPERABILITY as compared to CTS 4.6.D that only specifies sump monitoring and recording every 4 hours (once per shift for Quad Cities) and that air

sampling be performed once per day. Quad Cities currently utilizes eight hour shifts. TSUP 4.6.H.1 specifies sampling of the primary containment atmospheric particulate radioactivity once per 12 hours. TSUP 4.6.H.2 specifies determining the sump flow rate every 8 hours, not to exceed 12 hours. Therefore, proposed TSUP 4.6.H.1 conservatively reduces the periodicity of sampling from 24 hour to 12 hours when compared to CTS requirements. Proposed TSUP 4.6.H.2, relaxes the periodicity of the Dresden Unit 2 sump surveillance from 4 hours to 8 hours and maintains Quad Cities' sump surveillance at 8 hours. Proposed TSUP 4.6.H.2 has been shown based upon industry experience to provide an adequate level of protection for ensuring plant leakage rates are appropriately monitoring. The proposed SR periodicity is consistent with the guidance provided in GL 88-01. Therefore, the reduction in periodicity for Dresden Station has a negligible impact on existing plant safety margins.

2. CTS 4.6.D.2 for Dresden Unit 2 has not been retained within TSUP 3/4.6.H. The recirculation piping indication problems associated with the CTS for Dresden Unit 2 have been resolved, thus rendering these requirements obsolete. This information is inappropriate for retention within TSUP. The Technical Specification recommendations associated within GL 88-01 have been determined by the NRC staff to be sufficient for control of leakage from the reactor coolant pressure boundary.

3. Section 4.4.3.2.1.b of STS guidelines have been adopted (see CTS 3/4.D, SR, Item No. 1 above). The proposed specifications require monitoring the primary containment sump flow rate on average once per 8 hours, but not to exceed 12 hours. The deviations from STS are based upon precedence from LaSalle County Station regarding Generic Letter (GL) 88-01 and are consistent with the plant designs for Dresden and Quad Cities regarding to GL 88-01.

4. STS SR 4.4.3.2.1.d is not included within the proposed amendment. The reactor vessel head flange leak detection systems at Dresden and Quad Cities are not continuously operated in accordance with General Electric Service Information Letter (SIL) Number 42. SIL 42 strongly recommended that operation of the reactor vessel head flange leakage monitoring system be avoided once leakage through the first seal has been detected. Operating experience has shown that the amount of steam leakage through the inner seal of the reactor vessel head flange increases after each operation of the seal leak monitoring system. Failure of the second seal is detected using the primary containment leak detection systems.

5. STS SR 4.4.3.2.2 for reactor coolant system pressure isolation valves was not retained in the proposed specifications because the LCO was not adopted. The STS guidelines are not applicable to the Dresden and Quad Cities design.

6. Section 4.4.3.2.3 of STS guidelines has not been incorporated within the proposed Technical Specification amendment. These requirements are not included within the current Technical Specifications for Dresden or Quad Cities as system/equipment design is not applicable to the STS requirements.

7. TSUP 4.6.H, footnote (a) has been included to clarify that the air sampling system is not a means of quantifying leakage. Leakage from the reactor coolant pressure boundary

inside the drywell can be detected by drywell atmosphere radioactivity levels. The primary containment atmosphere sampling for radioactivity can provide indication of changes in leakage rates - not quantifiable leakage rates.

8. TSUP 4.6.G.2 is a new requirement for Dresden and Quad Cities. TSUP 4.6.G.2 provides additional requirements to further ensure that the sump system is adequately quantifying plant leakage. The proposed CHANNEL CALIBRATION is consistent in periodicity (every 18 months) to those for the related systems discussed in STS 4.4.3.1.

9. STS 3.4.3.1.c for containment air cooler condensate flow rate monitoring system is not applicable to Dresden and Quad Cities. Neither station has this system in their design and therefore, it is not adopted in the proposed specifications.

CTS 3/4.6.E Safety and Relief Valves

The relief valve requirements are a combination of the STS specifications 3/4.4.2.1 and 3/4.4.2.2. Because of the design differences, the relief valves include actions and surveillances from both specifications. Overpressure protection is provided by four relief valves, eight safety valves and one combination safety/relief valve. Standard Technical Specifications are developed assuming all of the overpressure protection valves are combination safety/relief valves. Therefore, due to the design of Dresden and Quad Cities the specification is split into two separate specifications with the applicable standard actions and surveillance requirements presented in each of the Limiting Conditions for Operation and Surveillance Requirements.

Applicability

1. The proposed TSUP 3.6.E and 3.6.F, Applicability is based on STS 3.4.2.1 and 3.4.2.2, Applicability. TSUP 3.6.E and 3.6.F specifies MODE(s) 1, 2 and 3. CTS 3.6.E.1 specifies that the nine safety valves shall be operable prior to startup for power operation, during power operating conditions and whenever the reactor coolant pressure is greater than 90 psig and temperature greater than 320 °F (i.e., approximately equivalent to Modes 1, 2 and 3). Therefore, the proposed TSUP requirements maintain the CTS applicability requirements for the safety valves. The proposed requirements are consistent with industry practice and have been shown to provide an adequate level of protection for the safety and relief valves. The proposed requirements maintain existing plant safety margins.

Actions

1. Proposed TSUP 3.6.F, Action 1 has been modified from the STS based on an approved amendment for Grand Gulf Station. The approved amendment deleted the two-minute time limit for closing a stuck open relief valve. The STS action is anticipatory to this requirement in the event of a stuck open S/RV and pre-emptive in all cases. The STS Action represents detailed methods of responding to an event and not necessarily a compensatory Action for failure to meet this LCO. Adequate capability of the suppression pool to perform its steam suppression function is maintained by TSUP 3.7.K by specifying minimum pool water level and maximum pool water temperature.

Suppression pool temperatures exceeding the 110°F suppression pool temperature limit would still require a reactor shutdown.

2. TSUP 3.6.F, Action 2 is consistent with the allowed-outage-time (AOT) for an inoperable ADS valve as specified in TSUP 3/4.5.A. CTS 3.6.E.1 requirements refer to CTS 3.5.D. CTS 3.5.D provide the requirements for the ADS system. CTS 3.5.D provides an AOT of seven (7) days provided the HPCI subsystem is operable and allows provisions to extend the AOT indefinitely if MAPLHGR multipliers are utilized. If two (2) ADS valves are inoperable, CTS 3.5.D provides an AOT of seven days. Therefore, proposed TSUP 3.6.F, Action 2 provides an adequate level of protection for inoperable Relief Valves and does not significantly reduce existing plant safety margins.

3. TSUP 3.6.F, Action 3 is encompassed within CTS 3.6.E.2 action requirements. CTS 3.6.E.2 requires the plant be brought to less than 90 psig and less than 320 °F within 24 hours with less than the required quantity of operable valves. TSUP 3.6.F, Action 3 specifies taking the plant out of power operation (MODE 3) within 12 hours and to COLD SHUTDOWN conditions within 24 hours. Placing the plant in HOT SHUTDOWN conditions minimizes the potential for requiring usage of the safety valves. Although proposed TSUP 3.6.F, Action 3 relaxes the requirement to place the plant in COLD SHUTDOWN conditions by 12 hours, this relaxation is compensated by the more restrictive requirement of taking the plant out of power operation and into HOT SHUTDOWN conditions within 12 hours. Therefore, the proposed requirements provide an equivalent level of protection as compared to CTS requirements and existing plant safety margins are not significantly reduced.

4. TSUP 3.6.F, Action 4 and TSUP 3.6.E, Action 2 regarding provisions with an inoperable position indicator is a new requirement not incorporated within CTS 3/4.6.E for Dresden or Quad Cities. However, similar provisions are encompassed within the action requirements for Dresden CTS 3/4.2, Table 3.2.6 and for Quad Cities CTS 3/4.2, Table 3.2-4. Similar Actions are proposed in TSUP 3/4.2. The proposed 30 day AOT provides a reasonable period of time to restore inoperable position indication on otherwise OPERABLE safety/relief valves. If the inoperable position indication is a result of inoperable safety/relief valves, TSUP 3.6.F, Actions 1, 2 or 3 or TSUP 3.6.E, Action 1 provides sufficient requirements for such situations.

5. TSUP 3.6.E, Action 1 is a new requirement that explicitly specifies action requirements within inoperable safety valves. CTS 3.6.E.1 states that "solenoid activated pressure valves shall be operable as required by Specification 3.5.D." The solenoid operated pressure valves are the relief valves. The CTS allows continued operation with one relief valve OOS provided MAPLHGR reduction factors are applied to the MAPLGHR limits. ComEd has chosen not to retain this provision such that the proposed TSUP for relief valves will only allow operation 14 days before a shutdown to under 150 psig is required. A complete discussion of TSUP 3/4.5 will be provided under a separate transmittal.

<u>Limiting Condition for Operation (LCO)</u>

1. CTS 3.6.E.1 is encompassed within TSUP 3.6.E and 3.6.F, Applicability which are based

on STS 3.4.2.1 and 3.4.2.2, Applicability. TSUP 3.6.E and 3.6.F, Applicability specify MODES 1, 2 and 3. CTS 3.6.E.1 specifies that the nine safety valves shall be operable prior to startup for power operation, during power operating conditions and whenever the reactor coolant pressure is greater than 90 psig and temperature greater than 320 °F (i.e., approximately equivalent to Modes 1, 2 and 3). Therefore, the proposed TSUP requirements maintain the CTS applicability requirements for the safety valves. The proposed requirements are consistent with industry practice and have been shown to provide an adequate level of protection for the safety and relief valves. The proposed requirements maintain existing plant safety margins.

2. CTS 3.6.E.1 [regarding nine safety valves] is encompassed within TSUP 3.6.E, LCO which is based on STS 3.4.2.1, LCO. Proposed TSUP 3.6.E, LCO maintains the equivalent requirements (nine safety valves shall be OPERABLE) as listed in CTS 3.6.E.1.

3. CTS 3.6.E.1 [regarding solenoid-activated pressure valves] is encompassed within TSUP 3/4.5, "ECCS," for the ADS system, which is based on STS 3/4.5. ComEd's response to the NRC staff's RAI on TSUP 3/4.5 will be transmitted separately.

4. CTS 3.6.E.2 is encompassed within TSUP 3.6.E and 3.6.F Actions which are based on STS 3.4.2.1 and 3.4.2.2, Actions. CTS 3.6.E.2 requires the plant to be in cold shutdown within 24 hours if the LCO cannot be met. Proposed TSUP 3.6.E and 3.6.F, terminating actions require the plant to be brought to HOT SHUTDOWN conditions within 12 hours and COLD SHUTDOWN conditions within the following 24 hours. The proposed TSUP Action requirements provide an equivalent or more limiting period of time in which the reactor must be placed in a safe condition with inoperable safety or relief valves.

5. The relief valve limiting condition for operation is a combination of the STS specifications 3/4.4.2.1 and 3/4.4.2.2. Because of the design differences, the relief valves include actions and surveillances from both specifications. Overpressure protection is provided by four relief valves, eight safety valves and one combination safety/relief valve. Standard Technical Specifications are developed assuming all of the overpressure protection valves are combination safety/relief valves. Therefore, due to the design of Dresden and Quad Cities the specification is split into two separate specifications with the applicable standard actions and surveillance requirements presented in each of the Limiting Conditions for Operation.

6. The Dresden and Quad Cities relief valve design does not include a low-set logic function but does include a time delay for reactuation of two relief valves. The two lowest set relief valves incorporate a time delay for re-opening to allow the steam/water mixture to fully clear the discharge piping prior to the relief valve re-opening.

7. Proposed LCO 3.6.F does not include 'close' settings. The requirements from the current Technical Specifications that do not include close settings have been retained in TSUP. However, the proposed TSUP 3.6.E and 3.6.F, LCO do include requirements that the safety and relief valves, respectively, shall be closed with OPERABLE position indication. This is an enhancement from CTS requirements which do not provide these requirements to site operations personnel. In addition, proposed TSUP 3.6.E, footnote

(a), which is based on STS 3.4.2.1, footnote '*" clarifies the test conditions for satisfying the LCO requirements. This is also an enhancement to CTS requirements that provides clearer guidance to site operations personnel for defining the LCO.

Surveillance Requirement (SR)

1. CTS 4.6.E [regarding safety valves] is encompassed within TSUP 3.6.E, LCO which is based on STS 3.4.2.1, LCO. Proposed TSUP 3.6.E, LCO maintains the equivalent requirements (nine safety valves shall be OPERABLE) as those listed in CTS 3.6.E.1.

2. CTS 4.6.E [regarding refueling outages] is encompassed within TSUP 4.6.E.2 which is based on STS 4.4.2.2.3. The periodicity specified in TSUP is that 1/2 of the valves be demonstrated once every 18 months. The proposed TSUP frequency is equivalent to the CTS requirements that 1/2 of the valves be demonstrated once every refueling outage. The proposed TSUP requirements ensure that the surveillance will be performed once every 18 months, not to exceed 22.5 months (with the 25% extension allowance of TSUP 4.0.B).

3. CTS 4.6.E [regarding relief valves] is encompassed within TSUP 3.6.F, LCO which is based on STS 3.4.2.2, LCO. Proposed TSUP 3.6.F, LCO maintains the equivalent requirements (five relief valves shall be OPERABLE) as those listed in CTS 4.6.E.

4. The proposed amendment request does not include the requirements outlined within STS section 4.4.2.1.1. These requirements are not applicable to the safety valve design at either Dresden or Quad Cities Stations. The NRC Staff has previously approved such an exception as noted within the LaSalle County Technical Specifications. Therefore, because of the design of safety valves at Dresden and Quad Cities Station, this deviation from STS guidelines is being proposed.

5. The proposed amendment request modifies the requirements outlined within STS section 4.4.2.2.2. Dresden and Quad Cities safety valve design incorporates acoustic monitors and tailpipe temperature indicators. Therefore, the STS requirements are modified to match the design differences at Dresden and Quad Cities.

6. ComEd has chosen not to adopt STS 4.4.2.1.2.b, footnote '*' . This footnote states "The provisions of Specification 4.0.D are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test." This deviation from STS is consistent with the CTS requirements for Dresden and Quad Cities and as such, does not affect existing plant safety margins.

7. Proposed SR 4.6.F.1 does not include a calibration of the Trip Units once per 31 days. In lieu of the STS requirements, proposed TSUP 4.6.F.1 requires a CHANNEL FUNCTIONAL TEST of the relief valve function once per 92 days. The Dresden and Quad Cities system design does not have analog trip units; therefore, the STS guidelines are not applicable for Dresden and Quad Cities. Proposed TSUP 4.6.F.1 is encompassed within CTS 3/4.2. The requirements of TSUP 3/4.2 will be provided under a separate transmittal. Proposed TSUP 4.6.F.1 provides new requirements for Dresden and Quad Cities when compared to CTS 3/4.6.E that provides additional assurance that the plant

relief valves are OPERABLE when compared to CTS requirements.

ComEd originally proposed a periodicity 92 days which is more restrictive than the current frequency of every refueling outage. ComEd proposes to retain the existing frequency of approximately 18 months based on similar justification provided in GL 93-05, and leave this as an open item contingent upon review and approval of a cleanup.

8. Proposed SR 4.6.E.1 and 4.6.F.2 include a relocation of current requirements included within CTS for Dresden and Quad Cities regarding the position indication for the safety and relief valves. The requirements of TSUP 3/4.2 will be provided under a separate transmittal.

CTS 3/4.6.F Structural Integrity

Applicability

1. Proposed TSUP 3.6.N, Applicability is based on STS 3.4.8, Applicability. There are no explicit CTS requirements regarding the applicability for Structural Integrity.

Actions

1. STS 3.4.8, Action a has been incorporated as a new requirement for Dresden or Quad Cities Stations within proposed TSUP 3.6.N, Action 1. The proposed requirements are consistent with the Dresden or Quad Cities plant designs and have been shown based upon industry experience to provide an adequate level of protection regarding the structural integrity of ASME Code Class 1 components.

2. Proposed TSUP Action 2 has been modified from STS 3.4.8, Action b to eliminate redundancy in wording (isolate vs. isolate prior to 200°F). The proposed deviation provides clearer guidance to site operations personnel and is a new requirement for Dresden and Quad Cities, consistent with system designs, that provides additional assurances that the structural integrity of the reactor coolant system is maintained. The proposed requirements are consistent with the Dresden and Quad Cities plant designs and have been shown based upon industry experience to provide an adequate level of protection regarding the structural integrity of ASME Code Class 2 components.

3. STS 3.4.8, Action c has been incorporated as a new requirement for Dresden and Quad Cities Stations within proposed TSUP 3.6.N, Action 3. The proposed requirements are consistent with the Dresden or Quad Cities plant designs and have been shown based upon industry experience to provide an adequate level of protection regarding the structural integrity of ASME Code Class 3 components.

4. STS 3.4.8, Action d has not been included for the proposed amendment due to the guidance provided in GL 87-09.

Limiting Condition for Operation (LCO)

1. CTS 3.6.F is encompassed within TSUP 3.6.N, LCO which is based on STS 3.4.8, LCO.

CTS 3.6.F specifies that the structural integrity of the primary system boundary shall be maintained per ASME Section XI. TSUP 3.6.N references TSUP 4.6.N. TSUP 4.6.N references TSUP 4.0.E which provides Dresden and Quad Cities licensing basis information related to the structural integrity of the primary system boundary per the auspices of Section XI.

2. CTS 3.6.F [regarding specific information related to ASME] has not been retained within TSUP. TSUP 3.6.N, LCO only contains a general reference to Section XI [ASME]. TSUP 4.0.E defines the applicability of ASME, Section XI requirements.

Surveillance Requirement (SR)

1. CTS 4.6.F is encompassed within TSUP 4.6.N which is based on STS 4.4.8. CTS 4.6.F [regarding specific information related to ASME] has not been retained within TSUP. TSUP 4.0.E defines the applicability of ASME, Section XI requirements.

CTS 3/4.6.G Jet Pumps

Applicability

1. CTS 3.6.G.1 [regarding startup/hot standby or run] is encompassed within TSUP 3.6.B, Applicability which is based on STS 3.4.1.2, Applicability. The proposed TSUP requirements for Jet Pumps are applicable during MODES 1 and 2 which is consistent with CTS run and startup/hot standby. Therefore, the proposed TSUP requirements are equivalent to CTS 3.6.G.1.

Actions

1. CTS 3.6.G.1 [regarding orderly shutdown] is encompassed within TSUP 3.6.B, Actions which are based on STS 3.4.1.2, Actions. The terminating action within TSUP 3.6.B specifies that the reactor be placed in HOT SHUTDOWN within 12 hours if the requirements of the LCO cannot be met. CTS 3.6.G.1 specifies that the reactor be placed in cold shutdown within 24 hours. The proposed requirements ensure that the reactor is placed in a safe condition in a time frame that is at least as expeditious as CTS requirements allow; thus, existing plant safety margins are maintained by the adoption of the STS terminal Action requirement.

2. Other CTS Actions and their comparison to TSUP Actions are further discussed below.

Limiting Condition for Operation (LCO)

1. CTS 3.6.G.1 is encompassed within TSUP 3.6.B, LCO which is based on STS 3.4.1.2, LCO. The proposed requirements specify that all jet pumps shall be operable which is equivalent to CTS requirements.

2. CTS 3.6.G.1 [regarding startup/hot standby or run] is encompassed within TSUP 3.6.B, Applicability which is based on STS 3.4.1.2, Applicability. The proposed TSUP requirements for Jet Pumps are applicable during MODES 1 and 2 which is consistent

with CTS run and startup/hot standby. Therefore, the proposed TSUP requirements are equivalent to CTS 3.6.G.1.

3. CTS 3.6.G.1 [regarding orderly shutdown] is encompassed within TSUP 3.6.B, Actions which are based on STS 3.4.1.2, Actions. The terminating action within TSUP 3.6.B specifies that the reactor be placed in HOT SHUTDOWN within 12 hours if the requirements of the LCO cannot be met. CTS 3.6.G.1 specifies that the reactor be placed in cold shutdown within 24 hours. The proposed requirements ensure that the reactor is placed in a safe condition in a time frame that is at least as expeditious as CTS requirements allow; thus, existing plant safety margins are maintained by the adoption of the STS terminal Action requirement.

4. CTS 3.6.G.2 for Quad Cities [flow indication from 19 pumps] is encompassed within TSUP 3.6.B, LCO, Actions and footnote (a). CTS 3.6.G.2 for Quad Cities was enacted due to the degraded condition of the jet pump flow indication in one (1) jet pump for Quad Cities. CTS 3.6.G.2 for Quad Cities conflicts with CTS 3.6.G.3 that allows continued operation with two (2) inoperable flow indications for the jet pumps. As such, the proposed TSUP LCO for Quad Cities specifies that flow indication shall be OPERABLE on at least 18 jet pumps.

5. CTS 3.6.G.2 for Dresden [flow indication from each pump prior to startup] is encompassed within the requirements specified in TSUP 4.0.D that requires the SR for systems or components be demonstrated OPERABLE prior to entering the applicable MODE. As previously discussed for Quad Cities, CTS 3.6.G.2 for Dresden conflicts with CTS 3.6.G.4 that allows continued operation with one (1) inoperable flow indications for the jet pumps. The originally proposed TSUP submittal for Dresden Station was consistent with CTS requirements for Quad Cities that allowed an indefinite period of operation with two (2) inoperable jet pump flow indicators. *This item should remain as an open item, contingent upon its review and final disposition in the TSUP cleanup package.* Proposed TSUP 4.6.B.1.d provides a necessary allowance from the provisions of 4.0.D in order to achieve the necessary operating conditions to perform the surveillance. The intention of CTS 3.6.G.2 is to ensure jet pump flow indication upon startup of the reactor. During cold shutdown or low flow conditions, such indication is unachievable. Thus, the allowance for a minimum period of time is necessary in order to satisfy the surveillance requirements. Therefore, the proposed requirements provide an equivalent level of jet pump indication control of the CTS requirements, thus, existing plant safety margins are maintained.

6. CTS 3.6.G.3 for Quad Cities and Dresden [regarding the definition of flow indication and immediate corrective action] has not been retained within TSUP 3/4.6.B. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59.

7. CTS 3.6.G.3 for Quad Cities [flow indication from all but two pumps] is encompassed within TSUP 3.6.B, Action 2. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

8. CTS 3.6.G.4 for Quad Cities is encompassed within TSUP 3.6.B, Action 3. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

9. CTS 3.6.G.4 for Dresden is encompassed within TSUP 3.6.B, LCO and Actions which are based on STS 3.4.1.2, LCO and Actions. CTS 3.6.G.4 allows a 12 hour allowed-outage-time (AOT) to restore one inoperable jet pump flow indicator. The originally proposed TSUP submittal for Dresden Station was consistent with CTS requirements for Quad Cities that allowed an indefinite period of operation with two (2) inoperable jet pump flow indicators. *This item should remain as an open item, contingent upon its review and final disposition in the TSUP cleanup package.*

10. CTS 3.6.G.5 for Quad Cities is encompassed within TSUP 3.6.B, Action 4. The CTS requirement to take immediate corrective action and restore flow indication within 12 hours has been replaced with a 12 hour AOT. The requirement to explicitly specify "immediate corrective action" is unnecessary as the overall AOT remains equivalent to existing requirements. Twelve hours provides a reasonable period of time to restore the inoperable flow indicators to OPERABLE status while minimizing risk to the site. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

<u>Surveillance Requirement (SR)</u>

1. CTS 4.6.G.1 is encompassed within TSUP 4.6.B which is based on STS 4.4.1.2. The CTS daily check of jet pump integrity and operability is encompassed within TSUP 4.6.B requirements that specify OPERABILITY determinations every 24 hours for recirculation loop flow, total core flow and individual jet pump flow. The proposed requirements provide enhanced guidance to site operations personnel by more explicitly defining the limiting conditions for operation and the periodicity of the surveillance. The proposed TSUP requirements are consistent with current industry practices which have been shown to provide an adequate level of protection and are equivalent to existing requirements.

2. CTS 4.6.G.1.a is encompassed within TSUP 4.6.B.1.a which is based on STS 4.4.1.2.a. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

3. CTS 4.6.G.1.b is encompassed within TSUP 4.6.B.1.b which is based on STS 4.4.1.2.b. TSUP surveillance requirement used to establish core plate differential pressure (Δp)/core flow relationships instead of CTS requirements to use "power-flow relationships". The TSUP requirement more accurately represents core conditions and allows a better jet pump operability demonstration. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

4. CTS 4.6.G.1.c for Quad Cities is encompassed within TSUP 4.6.B.1.c which is based on STS 4.4.1.2.c. The proposed TSUP requirements are consistent with existing plant specifications; thus existing plant safety margins are maintained.

5. CTS 4.6.G.2 for Dresden Unit 2 only [regarding operating with the equalizer valves closed] has not been retained within TSUP 4.6.B. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. In addition, this information is redundant to the requirements specified in Dresden Unit 2, License DPR-19, Section 2.C(4).

6. CTS 4.6.G.2 [regarding SLO SRs] are encompassed within TSUP 4.6.B.2. STS 3.4.1.1 or 3.4.1.3 do not provide requirements for SLO. The proposed TSUP requirements specify the specific similar requirements and maintain the CTS periodicity (every 24 hours); thus, existing plant safety margins are maintained.

7. CTS 4.6.G.3 regarding baseline data collection has not been retained within TSUP 4.6.B. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59.

8. STS 4.4.1.2 has been modified to eliminate the requirement to perform the jet pump surveillances prior to exceeding 25% of rated thermal power. Provisions approved for the River Bend Technical Specifications allow power to be increased above 25% of rated thermal power without performing the required surveillances as long as the surveillances are performed within 24 hours of exceeding 25% of rated thermal power.

CTS 3/4.6.H Recirculation Pump Flow Limitations

Applicability

1. CTS 3.6.H.1 specifies the applicability for recirculation pump speeds as when both pumps are in operation. CTS 3.6.H.1 is encompassed within proposed TSUP 3.6.C and 3.6.A, Applicability which is based on STS 3.4.1.1 and 3.4.1.3, Applicability, respectively. TSUP 3/4.6.A provides requirements for the recirculation system and TSUP 3/4.6.C provides requirements for the recirculation system pumps. TSUP 3.6.A deviates from STS 3.4.1.1 by not incorporating STS footnote '*'. Footnote '*' delineates special exceptions allowed during a plant's inial startup program which is not applicable for Dresden or Quad Cities Stations. TSUP 3.6.C, Applicability deviates from STS 3.4.1.3 by including "during two recirculation loop operation" to clarify that during single loop operation (SLO), TSUP 3.6.C does not apply. This follows the precedence set in the LaSalle County Technical Specifications and clarifies this requirement. During SLO, TSUP 3/4.6.A provides sufficient requirements.

Actions

1. The proposed action requires one of the recirculation pumps to be tripped. The action is different from the STS but is required to ensure that the LPCI loop select logic will function.

2. The proposed Action requirements do not incorporate STS guidelines for Thermal Hydraulic Stability. This is consistent with the current version of Quad Cities' and Dresden Technical Specifications.

3. To minimize the inadvertent recirculation pump startup, an action is conservatively added to the STS guidelines that requires the idle recirculation pump to be electrically prohibited from starting within 24 hours of initiation of single loop operation. These actions are equivalent to CTS actions.

<u>Limiting Condition for Operation (LCO)</u>

1. CTS 3.6.H.1 is encompassed within TSUP 3.6.C, LCO which is based on STS 3.4.1.3. In addition, CTS 3.6.H.1 is encompassed within proposed TSUP 3.6.C and 3.6.A, Applicability which is based on STS 3.4.1.1 and 3.4.1.3, Applicability, respectively. The proposed LCO implements the current requirements for recirculation pump flow mismatch limitations based on core thermal power which is slightly different than the STS requirements. STS 3.4.1.3 delineates total core flow as the threshold for the mismatch limits. The CTS requirements have been maintained and thus, there is no reduction in existing plant safety margins.

2. CTS 3.6.H.2 is encompassed within TSUP 3.6.C, Action 2 which are based on STS 3.4.1.3, Action b. TSUP 3.6.C, Action 2 deviates from STS 3.4.1.3, Action b by specifying that with the pump speeds outside of the limit, trip one of the recirculation pumps and perform the Actions required during SLO. STS 3.4.1.1 or 3.4.1.3 do not provide requirements for SLO. For example, STS 3.4.1.1, Action a specifies that the reactor be brought to HOT SHUTDOWN within 12 hours with one recirculation loop not in operation. Current Tech Spec 3.6.H.2 does not place a time limit on when the recirculation pump should be tripped. TSUP 3.6.C.1, Action 1 specifies a two hour time limit. ComEd does not believe this to be a relaxation because adding a time constraint to the proposed Action statement ensures a greater level of operator awareness and follow-through to disposition the problem. With the current TS, the requirements are vague which may extend the time period for operator action to take place. Because the proposed changes specify a time limit prior to which specific action is required, the changes ensure greater operator awareness is existent to disposition the concern; therefore, the proposed changes enhance existing safety margins. CTS 3.6.H.3 provides the current licensing basis requirements for SLO at Dresden or Quad Cities Stations.

3. CTS 3.6.H.3 [regarding SLO for more than 24 hours] is encompassed within TSUP 3.6.A, Action 1. The proposed TSUP requirements are equivalent to CTS requirements by assuring that SLO restrictions are enacted within a 24 hour period.

4. CTS 3.6.H.3.a for Quad Cities [CTS 3.6.H.3.e for Dresden] is encompassed within TSUP 3.6.A, Action 1.a. This requirement specifies that the MCPR Safety Limit (CTS 1.1.A) be increased by 0.01 during SLO. Proposed TSUP 3.6.A, Action 1.a requires that the MCPR Safety Limit (TSUP 2.1.B) be increased by 0.01 during SLO. CTS 1.1.A includes the requirement to increase the MCPR Safety Limit by 0.01 during SLO. TSUP 2.1.B includes the requirement to increase the MCPR Safety Limit by 0.01 during SLO. Therefore, the proposed TSUP requirements (TSUP 3.6.A, Action 1.a) are equivalent to

the applicable CTS requirements.

5. CTS 3.6.H.3.b for Quad Cities [CTS 3.6.H.3.f for Dresden] is encompassed within TSUP 3.6.A, Action 1.b. This requirement specifies that the MCPR Operating Limit (CTS 3.5.L.2 for Dresden or CTS 3.5.K for Quad Cities) be increased by 0.01 during SLO. Proposed TSUP 3.6.A, Action 1.b requires that the MCPR Operation Limit (TSUP 3.11.C) be increased by 0.01 during SLO. Therefore, the proposed TSUP requirements (TSUP 3.6.A, Action 1.b) are equivalent to the applicable CTS requirements.

6. CTS 3.6.H.3.c for Quad Cities [CTS 3.6.H.3.c and 3.6.H.3.d for Dresden] is encompassed within TSUP 3.6.A, Action 1.c. This requirement specifies that the flow biased APRM Rod Block LSSS be reduced by 3.5% (CTS 2.1.B) during SLO. As previously discussed, proposed TSUP 3.6.A, Action 1.c requires that the APRM Scram setpoints (TSUP 2.2.A) and APRM Rod Blocks (TSUP 3.2.E) and the RBM setpoints (TSUP 3.2.E) be reduced per TSUP 2.2.A and 3.2.E, respectively, during SLO. CTS 2.1.B provides the requirements for the APRM Rod Blocks. TSUP 2.2.A includes the requirements for the APRM Scram setpoints. TSUP 3.2.E includes the requirements for the APRM Rod Blocks (TSUP Table 3.2.E-1, Item No. 2) and RBM setpoints (TSUP Table 3.2.E-1, Item No. 1). Therefore, the proposed TSUP requirements are equivalent to CTS requirements.

7. CTS 3.6.H.3.d for Quad Cities [CTS 3.6.H.3.b for Dresden] is encompassed within TSUP 3.6.A, Action 1.c. This requirement specifies that the flow biased RBM Block LSSS be reduced by 4.0% (CTS 2.1.B) during SLO. Proposed TSUP 3.6.A, Action 1.c requires that the APRM Scram setpoints (TSUP 2.2.A) and APRM Rod Blocks (TSUP 3.2.E) and the RBM setpoints (TSUP 3.2.E) be reduced per TSUP 2.2.A and 3.2.E, respectively, during SLO. CTS 2.1.B provides the requirements for the APRM Rod Blocks. TSUP 2.2.A includes the requirements for the APRM Scram setpoints. TSUP 3.2.E includes the requirements for the APRM Rod Blocks (TSUP Table 3.2.E-1, Item No. 2) and RBM setpoints (TSUP Table 3.2.E-1, Item No. 1). Therefore, the proposed TSUP requirements are equivalent to CTS requirements.

8. CTS 3.6.H.3.e for Quad Cities [CTS 3.6.H.3.a for Dresden] is encompassed within TSUP 3.6.A, Action 1.e and TSUP 3.6.A, footnote (a). This requirement specifies that the recirculation pump in the idle loop shall be electrically prohibited from starting except to permit testing in preparation for return to service. Therefore, the CTS requirements are equivalent to TSUP 3.6.A, Action 1.e.

9. CTS 3.6.H.3.g for Dresden [regarding MAPLHGR limits] are encompassed within TSUP 3.6.A, Action 1.d. This requirement specifies that the MAPLHGR limits shall be reduced by the appropriate factors as specified in the CORE OPERATING LIMITS REPORT (COLR). It should be noted that TSUP 3.6.A, Action 1.d is a new requirement for Quad Cities not included in the CTS. TSUP 3.6.A, Action 1.d specifies that the APLHGR limits be appropriately reduced during SLO as specified in the COLR. Therefore, the CTS requirements are equivalent to proposed TSUP 3.6.A, Action 1.d.

10. CTS 3.6.H.3.g for Dresden [regarding one ADS valve out-of-service] has not been retained within TSUP. TSUP 3/4.5 provides the requirements for ADS valves out-of-

service. ComEd's response to the NRC staff's RAI for TSUP 3/4.5 will be provided under a separate transmittal.

11. CTS 3.6.H.4 is encompassed within TSUP 3.6.A, Action 2, which is based on STS 3.4.1.1, Action b. CTS requirements specify that with no recirculation loops in operation, the reactor be brought to less than 25% of rated thermal power within 2 hours and placed in hot shutdown within the following 12 hours (14 hours total). The proposed TSUP Action requirements maintain an equivalent level of protection as the reactor is required to be in HOT SHUTDOWN 14 hours (STARTUP within 8 hours followed by 6 hours to be in HOT SHUTDOWN) after entering the action statement. The deviation from CTS requirements is consistent to industry practices by following plant OPERATIONAL MODES as compared to plant power levels.

    TSUP 3.6.A, Action 2 deviates from STS 3.4.1.1, Action b by specifying 8 hours to be in the STARTUP MODE as compared to STS specifying 6 hours. Eight hours provides a more reasonable period of time in which to perform an orderly change of MODES from RUN to STARTUP. The proposed eight hours is consistent with other Action requirements and does not significantly reduce plant safety margins by allowing an additional two (2) hours to support an orderly MODE change.

12. CTS 3.6.H.5 is encompassed within TSUP 3.6.D, LCO, which is based on STS 3.4.1.4. The proposed TSUP requirements are identical to CTS requirements. Therefore, there are no reductions to existing plant safety margins.

13. CTS 3.6.H.5.a is encompassed within TSUP 3.6.D.1, LCO which is based on STS 3.4.1.4.a. The proposed TSUP requirements are identical to CTS requirements. Therefore, there are no reductions to existing plant safety margins.

14. CTS 3.6.H.5.b is encompassed within TSUP 3.6.D.2, LCO which is based on STS 3.4.1.4.b. The proposed TSUP requirements are identical to CTS requirements. Therefore, there are no reductions to existing plant safety margins.

15. CTS 3.6.H.5, footnote '*' is encompassed within TSUP 3.6.D, footnote (a). The proposed TSUP requirements are identical to CTS requirements. Therefore, there are no reductions to existing plant safety margins.

<u>Surveillance Requirement (SR)</u>

1. CTS 4.6.H is encompassed within TSUP 4.6.C which is based on STS 4.4.1.3. TSUP 4.6.C ensures that the recirculation pump speed is maintained within limits. The proposed periodicity has been shown based upon industry experience to provide an adequate level of protection for detecting potentially degraded conditions associated with recirculation pump speeds. The proposed TSUP requirements provide more direct guidance to site operations personnel by explicitly requiring the SR be performed every 24 hours. CTS 4.6.H only specifies a daily check. In addition, the proposed TSUP requirements are consistent with the plant designs at Dresden and Quad Cities Stations.

2. CTS 4.6.H.3 [the words 'Deleted'] for Dresden has not been retained within TSUP

3/4.6.D. For completeness, it should be noted that CTS 4.6.H.1, 4.6.H.2, 4.6.H.3 for Quad Cities, and 4.6.H.4 do not exist.

3. CTS 4.6.H.5 is encompassed within TSUP 4.6.D which is based on STS 4.4.1.4. The proposed TSUP requirements are identical to CTS requirements. Therefore, there are no reductions to existing plant safety margins.

4. STS surveillance requirement 4.4.1.1.1 is not adopted in the proposed specifications because both Dresden and Quad Cities are LPCI loop select plants. The STS surveillance was added for plants that made modifications to remove the LPCI loop select logic. Because Dresden and Quad Cities still utilize the LPCI loop select logic, the surveillance is redundant.

CTS 3/4.6.I Snubbers

CTS 3/4.6.I, "Snubbers," has been relocated to TSUP 3/4.8.F. ComEd's response to the NRC staff's Request for Additional Information (RAI) for TSUP 3/4.8 is provided under a separate transmittal. Changes to the Snubbers' requirements are based upon STS and the guidelines presented in Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," and GL 84-13, as applicable to Dresden or Quad Cities Stations.

TSUP 3/4.6.L Reactor Steam Dome

The reactor steam dome pressure is an assumed initial condition of Design Basis Accidents and transients and is also an assumed value in the determination of compliance with reactor pressure vessel overpressure protection criteria. The reactor steam dome pressure of ≤1005 psig is an initial condition of the vessel overpressure protection analysis. This analysis assumes an initial maximum reactor steam dome pressure and evaluates the response of the pressure relief system, primarily the safety valves, during the limiting pressurization transient. The determination of compliance with the overpressure criteria is dependent on the initial reactor steam dome pressure; therefore, the limit on this pressure ensures that the assumptions of the overpressure protection analysis are conserved.

Applicability

TSUP 3.6.L, Applicability is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.6.2, Applicability. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with the reactor steam dome. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the reactor steam dome. TSUP 3.6.L, Applicability deviates from STS 3.4.6.2, Applicability by including "or equal to" in the delineation of the pressure limit. This deviation is consistent to the plant analyses and provides enhanced guidance to site operations personnel for defining the applicable limiting condition at the specified limit.

Actions

TSUP 3.6.L, Actions is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.6.2, Actions. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with the reactor steam dome. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the reactor steam dome.

Limiting Condition for Operation (LCO)

TSUP 3.6.L, LCO is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.6.2, LCO. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with the reactor steam dome. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the reactor steam dome.

Surveillance Requirements (SR)

TSUP 4.6.L is a new requirement for Dresden and Quad Cities Stations and is based on STS 4.4.6.2. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately monitor the reactor steam dome pressure. The proposed surveillance requirements are based on industry standards which have been shown by industry experience to provide an adequate level of periodicity and protection for monitoring activities associated with the reactor steam dome pressure.

TSUP 3/4.6.M Main Steam Line Isolation Valves

Double isolation valves are provided on each of the main steam lines to minimize the potential leakage paths from the containment in case of a line break. Only one valve in each line is required to maintain the integrity of the containment, however, single failure considerations require that two valves be OPERABLE. The surveillance requirements are based on the operating history of this type of valve. The maximum closure time has been selected to contain fission products and to ensure the core is not uncovered following line breaks. The minimum closure time is consistent with the assumptions in the safety analyses to prevent pressure surges.

Applicability

TSUP 3.6.M, Applicability is a new requirement for Dresden and Quad Cities Stations that is maintained in CTS Table 3.5.1 for Quad Cities and administratively controlled for Dresden per the provisions of Generic Letter 91-08, and is based on STS 3.4.7, Applicability. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Main Steam Isolation Valves (MSIV). The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with MSIVs.

Actions

TSUP 3.6.M, Actions is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.7, Actions. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Main Steam Isolation Valves (MSIV). The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with MSIVs.

Limiting Condition for Operation (LCO)

TSUP 3.6.M, LCO is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.7, LCO. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Main Steam Isolation Valves (MSIV). The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with MSIVs.

Surveillance Requirements (SR)

1. TSUP 4.6.M is a new requirement for Dresden and Quad Cities Stations that includes the specific full closure times of the MSIVs and is based on STS 4.4.7. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately monitor Main Steam Isolation Valves (MSIV). The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of periodicity and protection for monitoring activities associated with MSIVs.

2. CTS 4.7.D.1.d provides a surveillance requirement for the main steamline power-operated isolation valves. 4.7.D.1.c(2) specifies the requirements/periodicity for MSIV closure time as once per quarter. TSUP 4.6.M specifies that the MSIVs shall be tested per 4.0.E. TSUP 4.0.E includes the requirements for the IST program which encompasses quarterly surveillances. Thus, the proposed periodicity is consistent with CTS requirements. There is no current TS LCO specific to the MSIVs.

TSUP 3/4.6.O Shutdown Cooling - Hot Shutdown (Dresden)
TSUP 3/4.6.O Residual Heat Removal - Hot Shutdown (Quad Cities)

The Shutdown Cooling (Residual Heat Removal for Quad Cities) systems in place at Dresden and Quad Cities Station cannot meet strict STS requirements due to design limitations. The proposed requirements ensure the minimum level of temperature control is maintained when applicable. The ability for taking credit for common heat exchangers and piping in the SDC mode of RHR is consistent to NUREG-1433 (Improved Technical Specifications).

Dresden and Quad Cities have different systems that are used for post shutdown decay heat removal purposes and therefore, the proposed specifications are slightly different. Dresden has a separate shutdown cooling system with 3 pumps and 3 heat exchangers per unit to remove decay heat from the reactor. Quad Cities utilizes the RHR system to remove decay heat. The predominate difference within the proposed specifications is that the Dresden system is capable of being throttled and can be configured to maintain a constant temperature. The RHR system at Quad Cities is not designed to permit throttling flow to maintain constant temperatures.

Applicability

1. TSUP 3.6.O, Applicability is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.9.1, Applicability. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during HOT SHUTDOWN conditions. TSUP 3.6.O, Applicability for Dresden deviates from STS by specifying coolant temperature as compared to STS reactor pressure as the SDC cut-in permissive. This deviation is consistent with the system design at Dresden Station. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

Actions

1. TSUP 3.6.O, Actions are new requirements for Dresden and Quad Cities Stations and are based on STS 3.4.9.1, Actions. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during HOT SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

2. Proposed TSUP 3.6.0, Action 1 requires that with less than the required shutdown cooling loops operable, within one hour and once per 24 hours thereafter demonstrate the operability of at least one alternate method capable of decay heat removal. TSUP 3.6.O, Action 1 is based on STS 3.4.9.1, Action a. In addition, proposed TSUP 3.6.O, Action 2 requires reactor coolant circulation by an alternate method when no shutdown cooling loops are available. The proposed SR is adopted from the STS. The proposed changes are consistent to the current plant system design and do not reduce existing plant safety margins.

3. Proposed TSUP 3.6.O, Actions for Quad Cities deviate from STS 3.4.9.1, Actions, when discussing RHR subsystem in operation. TSUP 3.6.O, Actions for Quad Cities specify

this requirement as when RHR subsystem OPERABILITY is required. As discussed above, the RHR system at Quad Cities is not designed to permit throttling flow to maintain constant temperatures. The system configuration does not allow either the shutdown cooling flow or the service water cooling flow to be throttled sufficiently to maintain constant temperature. The system is cycled on and off as needed to maintain the reactor coolant temperature below the required limits. Therefore, although the RHR system may be OPERABLE, it cannot be maintained in constant operation as specified in STS 3.4.9.1, Actions. This proposed deviation from STS requirements is consistent to the plant design at Quad Cities and provides additional requirements not included within the CTS for Quad Cities; thus existing plant safety margins are increased by the proposed TSUP 3.6.O, Actions.

Limiting Condition for Operation (LCO)

1. TSUP 3.6.O, LCO is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.9.1, LCO. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during HOT SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

2. Proposed TSUP 3.6.O, LCO for Quad Cities deviate from STS 3.4.9.1, LCO, when discussing RHR subsystem in operation. In addition, STS 3.4.9.1, footnote '*' has not been included within proposed TSUP 3.6.O for Quad Cities. This footnote is replaced with TSUP 3.6.O, footnote (a) for Quad Cities which clarifies the OPERABILITY requirements for the RHR subsystems. Operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required. However, to ensure adequate core flow to allow for accurate average reactor coolant temperature monitoring, nearly continuous operation is required. This proposed deviation from STS requirements is consistent to the plant design at Quad Cities and provides additional requirements not included within the CTS for Quad Cities; thus existing plant safety margins are increased by the proposed TSUP 3.6.O, LCO.

   TSUP 3.6.O, LCO for Quad Cities specifies this requirement as when the RHR subsystem is capable of circulating reactor coolant. As discussed above, the RHR system at Quad Cities is not designed to permit throttling flow to maintain constant temperatures. The system configuration does not allow either the shutdown cooling flow or the service water cooling flow to be throttled sufficiently to maintain constant temperature. The system is cycled on and off as needed to maintain the reactor coolant temperature below the required limits. Therefore, although the RHR system may be OPERABLE, it cannot be maintained in constant operation as specified in STS 3.4.9.1, LCO. This proposed deviation from STS requirements is consistent to the plant design at Quad Cities and provides additional requirements not included within the CTS for Quad Cities; thus existing plant safety margins are increased by the proposed TSUP 3.6.O, LCO.

ATTACHMENT B

Surveillance Requirements (SR)

1. TSUP 4.6.O is a new requirement for Dresden and Quad Cities Stations and is based on STS 4.4.9.1. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately monitor the Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during HOT SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of periodicity and protection for monitoring activities associated with the aforementioned systems.

TSUP 3/4.6.P Shutdown Cooling - Cold Shutdown (Dresden)
TSUP 3/4.6.P Residual Heat Removal - Cold Shutdown (Quad Cities)

The Shutdown Cooling systems in place at Dresden and Quad Cities Station cannot meet strict STS requirements due to design limitations. The proposed requirements ensure the minimum level of decay heat removal capability is maintained when applicable. The ability for taking credit for common heat exchangers and piping in the SDC mode of RHR is consistent to NUREG-1433 (Improved Technical Specifications).

Dresden and Quad Cities have different systems that are used for decay heat removal purposes and therefore, the proposed specifications are different. Dresden has a separate shutdown cooling system with 3 pumps and 3 heat exchangers per unit to remove decay heat from the reactor. Quad Cities utilizes the RHR system to remove decay heat. The predominate difference within the proposed specifications is that the Dresden system is capable of being throttled and can be configured to maintain a constant temperature. The RHR system at Quad Cities is not designed to permit throttling flow to maintain constant temperatures.

Applicability

1. TSUP 3.6.P, Applicability is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.9.2, Applicability. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during COLD SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

Actions

1. TSUP 3.6.P, Actions are new requirements for Dresden and Quad Cities Stations and are based on STS 3.4.9.2, Actions. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with the Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad

Cities during COLD SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

Limiting Condition for Operation (LCO)

1. TSUP 3.6.P, LCO is a new requirement for Dresden and Quad Cities Stations and is based on STS 3.4.9.2, LCO. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately disposition potential degraded conditions associated with Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during COLD SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of protection during activities associated with the aforementioned systems.

2. Proposed TSUP 3.6.P, LCO for Quad Cities deviates from STS 3.4.9.2, LCO, when discussing RHR subsystem in operation. TSUP 3.6.P, LCO for Quad Cities specifies this requirement as when the RHR subsystem is capable of circulating reactor coolant. As discussed above, the RHR system at Quad Cities is not designed to permit throttling flow to maintain constant temperatures. The system configuration does not allow either the shutdown cooling flow or the service water cooling flow to be throttled sufficiently to maintain constant temperature. The system is cycled on and off as needed to maintain the reactor coolant temperature below the required limits. Therefore, although the RHR system may be OPERABLE, it cannot be maintained in constant operation as specified in STS 3.4.9.2, LCO. This proposed deviation from STS requirements is consistent to the plant design at Quad Cities and provides additional requirements not included within the CTS for Quad Cities; thus existing plant safety margins are increased by the proposed TSUP 3.6.P, LCO.

Surveillance Requirements (SR)

1. TSUP 4.6.P is a new requirement for Dresden and Quad Cities Stations and is based on STS 4.4.9.2. The proposed requirements are applicable to the Dresden and Quad Cities plant design and provide enhanced guidance to site operations personnel to appropriately monitor the Shutdown Cooling (SDC) system for Dresden or the Residual Heat Removal (RHR) system for Quad Cities during COLD SHUTDOWN conditions. The proposed requirements are based on industry standards which have been shown by industry experience to provide an adequate level of periodicity and protection for monitoring activities associated with the aforementioned systems.

ATTACHMENT C

ComEd Response to TSUP RAI
Questions on TSUP 3/4.6

c:\tsup\tsuprai.36

ATTACHMENT C

TSUP Section 3/4.6

1. Indicate whether or not the requirement on the vessel flange to vessel shell allowable temperature differential (current TS 3.6.A.3) is being retained in the proposed TSs, and if not, justify its deletion.

   Response: CTS 3.6.A.3 [shell flange to shell temperature differential of < 140 °F] has not been retained within proposed 3/4.6.K. Specific analyses were made based on a heating and cooling rate of 100 °F/hr. These analyses were also considered in the design of the pressure vessel. Such information, however, is design details more appropriate for control within the plant's UFSAR. As such, the relocation of this specification to the UFSAR does not reduce existing plant safety margins. These details are adequately controlled by procedures and their revisions adequately controlled by the provisions of 10 CFR 50.59. The proposed TSUP requirements have been shown based upon industry experience to provide an adequate level of safety regarding heatup/cooldown rates. The proposed changes do not significantly reduce existing plant safety margins.

2. Explain whether proposed TS 3.6.G.2 should refer to the drywell floor drain sump sampling system, similar to the reference in current Dresden TS 3.6.D.2 to the primary containment sump sampling system?

   Response: This issue only applies to DPR-25 for Dresden Unit 3 as there is no such reference in the Dresden Unit 2 Technical Specifications (DPR-19). The proposed TSUP requirements specified in TSUP 3.6.G.2 refer to the drywell floor drain sump system. The proposed requirements specified in TSUP 3.6.G.2 are equivalent to those discussed in CTS 3.6.D.2 for Dresden Unit 3. The proposed requirements do not adversely affect existing plant safety margins for Dresden Station.

3. Concerning the proposed TS 3.6.B. Action statements, current Dresden and Quad Cities TSs 3.6.G.2 place additional restrictions on jet pump flow indication when exiting operational mode 4, but this does not appear in the proposed TSs. Further, the actions to be taken (be in Hot Shutdown in 12 hours vs. be in Cold Shutdown in 24 hours) also appear to be different and may constitute a relaxation of the current TSs. Explain whether a relaxation of the TSs is being proposed and justify as appropriate.

   Clearly define how the proposed TSs relate to the current Quad Cities TSs and if they do or do not represent a relaxation. Also, address the need for compensatory flow calculations with inoperable flow indication monitors (current Quad Cities TS 3.6.G.3) and how this is or why this is not explicitly incorporated into the proposed TSs.

   Response - CTS 3.6.G.2 for Quad Cities [flow indication from 19 pumps] is encompassed within TSUP 3.6.B, LCO, Actions and footnote (a). CTS 3.6.G.2 for Quad Cities was enacted due to the degraded condition of the jet pump flow indication in one (1) jet pump for Quad Cities. CTS 3.6.G.2 for Quad Cities conflicts with CTS 3.6.G.3 that allows continued operation with two (2)

inoperable flow indications for the jet pumps. As such, the proposed TSUP LCO for Quad Cities specifies that flow indication shall be OPERABLE on at least 18 jet pumps. The proposed TSUP package provides an equivalent level of control for the current Technical Specification requirements existent for Quad Cities and meets the intent of STS requirements. Dresden had originally proposed in TSUP 3.6.B to allow a certain amount of jet pump flow indicators to be inoperable to be consistent to the requirements previously approved for Quad Cities for jet pump flow in an NRC staff SER dated May 23, 1990.

However, ComEd proposes to modify the originally proposed requirements to maintain the existing licensing requirements for the jet pumps at Dresden Station (based on STS 3.4.1.2) Therefore, ComEd proposes that this issue remain as an open item, contingent upon its disposition in the TSUP clean-up package.

4. Identify whether the statement in proposed TS 3.6.C.1. Action 1 on recirculation pump speed differential represents a relaxation of current Dresden TS 3.6.H.2 and, if so, justify. This is particularly relevant in the case of Dresden Station and the implementation of the LPCI loop select logic.

   Response - Current Tech Spec 3.6.H.2 does not place a time limit on when the recirculation pump should be tripped. TSUP 3.6.C.1, Action 1 specifies a two hour time limit. ComEd does not believe this to be a relaxation because adding a time constraint to the proposed Action statement ensures a greater level of operator awareness and follow-through to disposition the problem. With the current TS, the requirements are vague and up to interpretation which may extend the time period for operator action to take place. Because the proposed changes specify a time limit prior to which specific action is required, the changes ensure greater operator awareness is existent to disposition the concern; therefore, the proposed change enhance existing safety margins.

5. Note A.4 mentions that ComEd is proposing to delete the current Dresden Station TSs 3.6.H.3.b, 3.6.H.3.c, 3.6.H.3.e, 4.6.H.3.a, and 4.6.H.3.b. As of Amendment #121, dated June 16, 1994, TS 4.6.H.3 has been deleted. Indicate the relation of proposed TSs 3.6.A. Action 1.a and Action 1.c to the current Dresden Unit 3 TSs 3.6.H.3.e, 3.6.H.3.b, and 3.6.H.3.c.

   Response: Dresden CTS 3.6.H.3.e requires that the MCPR Safety Limit (CTS 1.1.A) be increased by 0.01 during SLO. Proposed TSUP 3.6.A, Action 1.a requires that the MCPR Safety Limit (TSUP 2.1.B) be increased by 0.01 during SLO. CTS 1.1.A includes the requirement to increase the MCPR Safety Limit by 0.01 during SLO. TSUP 2.1.B includes the requirement to increase the MCPR Safety Limit by 0.01 during SLO. Therefore, the proposed TSUP requirements (TSUP 3.6.A, Action 1.a) are equivalent to CTS requirements (CTS 3.6.H.3.e).

   CTS 3.6.H.3.b requires that the flow biased RBM Block LSSS be reduced by 4.0%

(CTS 2.1.B) during SLO. Proposed TSUP 3.6.A, Action 1.c requires that the APRM Scram setpoints (TSUP 2.2.A) and APRM Rod Blocks (TSUP 3.2.E) and the RBM setpoints (TSUP 3.2.E) be reduced per TSUP 2.2.A and 3.2.E, respectively, during SLO. CTS 2.1.B provides the requirements for the APRM Rod Blocks. TSUP 2.2.A includes the requirements for the APRM Scram setpoints. TSUP 3.2.E includes the requirements for the APRM Rod Blocks (TSUP Table 3.2.E-1, Item No. 2) and RBM setpoints (TSUP Table 3.2.E-1, Item No. 1). Therefore, the proposed TSUP requirements are equivalent to CTS requirements.

CTS 3.6.H.3.c requires that the flow biased APRM Rod Block LSSS be reduced by 3.5% (CTS 2.1.B) during SLO. As previously discussed, proposed TSUP 3.6.A, Action 1.c requires that the APRM Scram setpoints (TSUP 2.2.A) and APRM Rod Blocks (TSUP 3.2.E) and the RBM setpoints (TSUP 3.2.E) be reduced per TSUP 2.2.A and 3.2.E, respectively, during SLO. CTS 2.1.B provides the requirements for the APRM Rod Blocks. TSUP 2.2.A includes the requirements for the APRM Scram setpoints. TSUP 3.2.E includes the requirements for the APRM Rod Blocks (TSUP Table 3.2.E-1, Item No. 2) and RBM setpoints (TSUP Table 3.2.E-1, Item No. 1). Therefore, the proposed TSUP requirements are equivalent to CTS requirements.

6. The MAPLHGR reference in current Dresden TS 3.6.H.3.g is understood to be included in the proposed TS 3.6.A. Action 1.d. However the current Quad Cities TSs in Section 3.6.H.3 do not have a reference to MAPLHGR limits. Explain how this difference between the stations is to be resolved in their core operating limit reports (COLRs) under the proposed TSs.

   Response: The current Dresden limits are fuel-vendor specific and not relevant to the fuel in usage at Quad Cities. These requirements are appropriately controlled at Dresden Station in the COLR with the current Tech Specs and will be appropriately controlled in the COLR (an owner controlled document) with TSUP.

7. Identify whether the statements in proposed TS 4.6.K on maintaining operation within pressure/temperature limits represent a relaxation of current Dresden TSs 4.6.A and 4.6.B. The apparent relaxations apply to the frequency with which the temperature is recorded, the temperature readings which are specified to be recorded, and with regard to 4.6.B.1 the temperature range over which the temperature records are required.

   Response - CTS 4.6.A.2 is encompassed within TSUP 4.6.K.2 which is based on STS 4.4.6.1.2. The CTS requirements to perform the surveillance every fifteen minutes until 3 consecutive readings are within five degrees has not been retained within TSUP 4.6.K.2. The specific details related to the methods for performing surveillances are inappropriate for inclusion within the Technical Specifications. These details are adequately controlled by procedures and their

revisions adequately controlled by the provisions of 10 CFR 50.59.

The periodicity of TSUP 4.6.K.2 has been changed as compared to CTS 4.6.A.2 CTS 4.6.A.2 specifies that the temperatures be recorded at fifteen minute intervals until three consecutive readings are within five degrees. The proposed TSUP requirements specify that the temperature/pressure limits be verified 15 minutes prior to the withdrawal of control rods to bring the reactor to critical and every 15 minutes thereafter during system heatup. The proposed periodicity (every 30 minutes) is consistent to industry experience that provide an adequate level of safety regarding monitoring plant thermal transients.

8. With regard to current Dresden TS 4.6.C.1.c on the monitoring of the primary coolant activity during shutdown procedures after recording I-131 Dose Equivalent levels in excess of 4.0 microcuries/gram, the proposed TS 3.6.J. Action 1 only indicates that Hot Shutdown is required in 12 hours but does not impose any specific monitoring guidance. Identify how the requirements of the current TS are maintained, or provide justification for their deletion, in the proposed TSs. Additionally, address whether the surveillance requirements in proposed TS Table 4.6.J-1 Item 2 on Dose Equivalent I-131 Concentration are a relaxation of the current timetable in Dresden TS 4.6.C.1.a.

   Response - The current Technical Specification require sampling every 8 hours until the reactor is in Cold Shutdown condition whereas the TSUP requires sampling per Action 2 which refers to Table 4.6.J-1, Item 3.a : sampling every 4 hours. The proposed change is more restrictive and conservative than the current licensing basis, and as such, does not significantly reduce the margin of safety.

9. In examining current Quad Cites TS 4.6.C.1.c, it seems to suggest guidance on isotopic analysis of radioiodides down to 0.05 microcuries/gm under the given pre-operational conditions. Identify whether the requirements of this section are found elsewhere in the proposed TSs and if they are not, explain if this is a relaxation of the current TSs.

   Response - The basis of the current Technical Specification 3.6/4.6.C.1 is to detect significant and rapid changes in reactor coolant radioiodine concentration during steady state operation. The reactor coolant sample is used to verify that the radioiodine concentration has not significantly changed over a 96 hour period. In addition, the trend of radioactive gaseous effluents, which is continuously monitored, provides additional verification that the reactor coolant iodine concentration has not rapidly and significantly changed.

   However, radioiodine concentration can change rapidly in the reactor coolant during transient reactor operations such as reactor shutdown, reactor power change, and reactor startup if failed fuel is present. Although reactor coolant sampling (and associated isotopic analysis) is ineffective as a means to rapidly detect gross fuel element failures, some capability to detect gross fuel element

failures is inherent in the radiation monitors in the off-gas system.

Current specifications 4.6.C.1.c and d. provide a method to detect changes in radioiodine concentration which may have occurred during previous periods of power and/or shutdown operations. These sampling requirements provide escalating sampling criteria during a reactor startup based upon previous operational radioiodine concentration. The need for these sampling criteria and associated sampling requirements are based upon early BWR fuel failure experience. Since that time, fuel performance at Quad Cities, and within the industry, has improved to the point that a pre-operational check of reactor coolant radioiodine concentration is no longer necessary. As such, the BWR-STS sampling criteria is based upon changes in power level and/or offgas radiation levels.

Proposed Table 4.6.J-1, "REACTOR COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM" Item 3.b) and ACTION 3.a through c. (which are consistent with BWR-STS; see Attachment 2.J of P. Piet to T. Murley letter dated September 17, 1993) provide this same capability. The proposed (and BWR-STS) reactor startup sampling requirements are based upon changes in power levels and changes in offgas radiation levels. The difference between the lower level of analysis in the current specifications (1% of the 5.0 μCi/gm action level) and the proposed (and BWR-STS) sampling criteria is offset by the lower proposed action level for radioiodine concentration (proposed 0.2 μCi/gm versus current 5.0 μCi/gm), and the sampling requirements based upon changes in power level and/or offgas radiation levels. In general, the proposed specification provides clearer guidance to site operating personnel and further assures that appropriate plant parameters are monitored and that appropriate actions are required in the event degraded conditions are discovered; therefore, the proposed requirements for Specific Activity do not significantly reduce the margin of safety.

10. Identify whether the surveillance requirements of proposed Technical Specification 4.6.I are to be understood only to apply to operational modes 1, 2, and 3.

Response - Yes.

11. The current Dresden Station TS 4.6.C.3.a requires conductivity and chloride ion content analysis upon abnormal conductivity indication by the continuous conductivity monitors. The proposed TSs do not appear to maintain this requirement. Identify the location of this requirement in the proposed TSs or identify if its deletion is or is not a relaxation of the current TSs.

Response - TSUP incorporates these requirements in 4.6.I.2 (Table 3.6.I-1). This is not a relaxation from 4.6.C.3.a as that requirement is to take samples every 96 hours when the conductivity monitor is indicating abnormal levels. The

proposed requirements specify a sample every 8 hours for chlorides when conductivity exceeds the specified limit in Table 3.6.I-1. The proposed requirements are more restrictive than the current Tech Spec requirements outlined in 4.6.C.3.a.

12. Proposed TS 4.6.I.3 in addressing operation with an inoperable continuous operating conductivity monitor does not prescribe chloride ion content analysis with any set schedule (as is found in current Dresden TS 4.6.C.3.b). Identify the location of this requirement in the proposed TSs or identify if its deletion is or is not a relaxation of the current TSs.

Response - TSUP incorporates these requirements in 4.6.I.2 (Table 3.6.I-1). This is not a relaxation from 4.6.C.3.b as that requirement is to take samples every 24 hours and analyze when the conductivity monitor is indicating abnormal levels. The proposed requirements specify a sample every 8 hours for chlorides when conductivity exceeds the specified limit in Table 3.6.I-1. The proposed requirements are more restrictive than the current Tech Spec requirements outlined in 4.6.C.3.b.

13. Identify whether or not the relief valve setpoints in proposed TS 3.6.F represent a relaxation in setpoint pressure when compared to the setpoint in current TS 4.6.E (valve nos. 203-3A through 203-3E). If this a relaxation of the current specification, provide a justification.

Response - No. The current Tech Specs for 4.6.E have as a footnote "The allowable setpoint error for each valve is plus or minus 1%." The values proposed in TSUP incorporate the maximum tolerance value in the listed for setpoint and is equivalent to the current requirements (i.e., 1124 x 1.01 = 1135.24 and 1101 x 1.01 = 1112.01). Therefore, the proposed values are less (more restrictive) than the current Tech Spec requirements and do not adversely affect the current licensing basis.

14. Explain the differences in wording of proposed TS 4.6.B.1.b. "from established core plate delta P/core flow relationships" vs. the STS 4.4.1.2.b. "from recirculation loop flow measurements" and the current TS 4.6.G.1.b. "from established power-core flow relationships".

Response - The proposed wording more accurately describes the measurable plant process variable. The proposed TSUP requirements, when compared with the CTS requirements, are equivalent and do not pose a relaxation.

15. Section 3/4.6.M on the Main Steam Isolation Valves is indicated to be a rewrite of the existing TSs, provide a list of all applicable current Dresden and Quad Cities TSs relevant to these sections which are being rewritten.

TSUP Section 3/4.6

Response - Dresden CTS 4.7.D.1.d provides a surveillance requirement for the main steamline power-operated isolation valves. CTS 4.7.D.1.c(2) for Dresden and Quad Cities specifies the requirements/periodicity for MSIV closure time as once per quarter. Proposed TSUP 4.6.M specifies that the MSIVs shall be tested per 4.0.E. TSUP 4.0.E includes the requirements for the IST program which encompasses quarterly surveillances. Thus, the proposed periodicity is consistent with CTS requirements. A more complete discussion regarding TSUP 3/4.7 will be provided under a separate transmittal.

16. The Executive Summary Sections O and P as well as notes O.1 and P.1 indicate that the corresponding proposed TSs on Shutdown Cooling are rewrites of current specifications. Note the sections of the Quad Cities TSs which are being rewritten in proposed TSs 4.6.O and 4.6.P.

Response - In general, TSUP is a re-write of existing Technical Specifications. The note in question is generic to all sections of the TSUP project. ComEd agrees that note O.1 and P.1, specifically, are unclear because there are no current Shutdown Cooling (SDC) Tech Specs. However, it shall be noted that the proposed specifications for Shutdown Cooling provides clearer guidance to site operating personnel and further assures that appropriate plant parameters are monitored and that appropriate actions are required in the event degraded conditions are discovered; therefore, the proposed requirements for Shutdown Cooling increase the margin of safety.

ATTACHMENT D

Marked-Up Current Technical Specification Pages

FOR INFORMATION ONLY

3.6 LIMITING CONDITION FOR OPERATION

PRIMARY SYSTEM BOUNDARY

Applicability:

Applies to the operating status of the reactor coolant system.

Objective:

To assure the integrity and safe operation of the reactor coolant system.

Specification:

A. Thermal Limitations

1. Except as indicated in 3.6.A.2 below, the average rate of reactor coolant temperature change during normal heatup or cooldown shall not exceed 100°F/hr when averaged over a one-hour period.

B UP 3.6.K.1 & 2
LCO

2. A step reduction in reactor coolant temperature of 240°F is permissible so long as the limit in Specification 3.6.A.3 below is met.

3. At all times, the shell flange to shell temperature differential shall not exceed 140°F.

4.6 SURVEILLANCE REQUIREMENT

PRIMARY SYSTEM BOUNDARY

Applicability:

Applies to the periodic examination and testing requirements for the reactor coolant system.

Objective:

To determine the condition of the reactor coolant system and the operation of the safety devices related to it.

Specification:

A. Thermal Limitations

1. During heatups and cooldowns the following temperatures shall be permanently recorded at 15 minute intervals:

"determined"

30

   a. reactor vessel shell

   b. reactor vessel shell flange

   c. recirculation loops A & B

2. The temperatures listed in 4.6.A.1 shall be permanently recorded subsequent to a heatup or cooldown at 15 minute intervals until three consecutive readings are within 5 degrees of each other.

See Revised
B UP 4.6.K 2

FOR INFORMATION ONLY

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

B. Pressurization Temperature

1. The reactor vessel shall ~~be vented and power~~ operation shall not be conducted ~~unless~~ the reactor vessel temperature is equal to or greater than that shown in Curve C of Figure 3.6.1. Operation for hydrostatic or leakage tests, during heatup or cooldown, and with the core critical shall be conducted only when reactor vessel metal temperature is equal to or above that shown in the appropriate curve of Figure 3.6.1. Figure 3.6.1 is effective through 16 effective full power years. At least six months prior to 16 effective full power years new curves will be submitted.

Bup 3.6.K, Appl.

TB up 3.6.K, LCO

2. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is greater than or equal to 80°F.

TSup 3.6.K.4

100

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

Bup 4.6.K

B. Pressurization Temperature

1. Reactor Vessel shell temperature and reactor coolant pressure shall be ~~permanently recorded~~ at 15 minute intervals whenever the shell temperature is below 220°F and the reactor vessel is not vented.

determined

30

Bup 3.6.K, Appl

Bup 4.6.K.4.b

2. When the reactor vessel head bolting studs are tightened or loosened the reactor vessel shell temperature ~~immediately~~ below the head flange shall be ~~permanently~~ recorded.

~~w/in 30 mins~~

FOR INFORMATION ONLY

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

3. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program where possible conform to ASTM E 185. ~~The monitors~~ and samples will be removed and tested as outlined in Table 4.6.2 to experimentally verify the calculated values of integrated neutron flux that are used to determine NDTT for Figure 4.6.1.

App. H - Bup 4.6.K.3

Bup 3.6.J, LCO

C. Coolant Chemistry

1. a. The reactor coolant activity shall be maintained less than 0.2 microcuries per gram DOSE EQUIVALENT I-131 during Reactor Power operation.

Bup 3.6.J Mode 1, 2, 3

b. If the reactor coolant activity is greater than 0.2 microcuries per gram and less than or equal to 4.0 microcuries per gram DOSE EQUIVALENT I-131, for more than 48 continuous hours (one continuous time interval) an orderly shutdown shall be immedi-

Bup 3.6.J, Action 1

Bup Table 4.6.J-1

C. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for DOSE EQUIVALENT I-131 and total activity content.

Bup 4.6.J

b. When an isotopic analysis shows reactor coolant activity to be in excess of 0.2 microcuries per gram and less than 4.0 microcuries per gram DOSE EQUIVALENT I-131, additional reactor coolant

Bup 3.6.J, Actions & 4.6.J

FOR INFORMATION ONLY

BUP 4.6.J

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

~~ately~~ initiated and the unit shall be in cold shutdown within 24 hours.

HOT and MSIVs closed 12

c. If a sample of reactor coolant activity is greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, a second sample shall be taken and analyzed within 8 hours. If the second sample indicates a reactor coolant activity greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, an orderly shutdown shall be initiated and the unit shall be in cold shutdown within 24 hours. Should the second sample indicate a reactor coolant activity less than or equal to 4.0 microcuries per gram DOSE EQUIVALENT I-131, statement 3.6.C.1b shall apply.

BUP 3.6.J, Action 1

Hot 12

BUP 3.6.J, Action 2

2. The reactor coolant water shall not exceed the following limits ~~with steaming~~ rates less than 100,000 pounds per ~~hour except as~~ specified in 3.6.C.3:
Conductivity 2 micro-mho/cm
~~Chloride~~ ion 0.1 ppm

BUP 3.6.I, LCO

BUP 3.6.I, Applicability

BUP Mode dependent limits

3. For reactor startups the ~~maximum value~~ for conductivity shall not exceed 10 micro-mho/cm and the maximum value for chloride ion concentration shall not exceed 0.1 ppm, for the first 24

0.5

BUP 3.6.I, Actions

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

samples shall be taken and analyzed at least 3 times every 24 hours.

6

c. When reactor coolant activity is greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, reactor coolant samples shall be taken and analyzed every 8 hours until the reactor is in a cold shutdown condition.

4

TSUP 3.6.J Actions & Table 4.6.J-1

see TSUP 4.6.I.3

2. During startups and at steaming rates below 100,000 pounds per hour, a sample of reactor coolant shall be taken every four hours and analyzed for conductivity and chloride content.

72 h per Table 3.6.I-1

3. a. With steaming rates greater than or equal to 100,000 pounds per hour, a reactor coolant sample shall be taken at least every 96 hours ~~and~~ when the continuous conductivity

TSUP 4.6.I.3

4

FOR INFORMATION ONLY

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

TS up 3.6.I, Action

hours after placing the reactor in the power operating condition.

Mode 1

4. Except as specified in 3.6.C.3 above, the reactor coolant water shall not exceed the following limits with steaming rates greater than or equal to 100,000 pounds per hour:
Conductivity 5 micro-mho/cm
Chloride ion 0.5 ppm

B up 3.6.I, Actions

10

5. If Specification 3.6.C.1, 3.6.C.2, 3.6.C.3 or 3.6.C.4 is not met, an orderly shutdown shall be initiated.

TS up 3.6.I, Action

D. Coolant Leakage

1. Any time irradiated fuel is in the reactor vessel and reactor coolant temperature is above 212°F, reactor coolant leakage into the primary containment from unidentified sources shall not exceed 5

TS up 3.6.H, Applicability

TS up 3.6.H, LCO

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

monitors indicate abnormal conductivity (other than short-term spikes) and analyzed for conductivity and chloride ion content.

B up 4.6.I.3

b. When the continuous conductivity monitor is inoperable, a reactor coolant sample should be taken at least daily and analyzed for conductivity and chloride ion content.

TS up 4.6.I.3

4 hours

B up 4.6.H.1

D. Coolant Leakage

1. Reactor coolant system leakage shall be checked by the sump and air sampling system. Sump flow monitoring and recording shall be performed once per 4 hours. Air sampling shall be performed once per day.

8 hrs, not to exceed 12

12 hours

B up 4.6.H.1 & 2

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

Bup 3.6.H.2, LCO

gpm. In addition, the total reactor coolant system leakage into the primary containment shall not exceed 25 gpm. If these conditions cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

Bup 3.6.H Actions

2. ~~After~~ completion of the investigation, or containment inspection, specified in 4.6.D.2.a or 4.6.D.2.b, if the leakage is determined to be due to a thru wall pipe crack on the reactor coolant pressure boundary, an orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

TSup 3.6.E, Applicability

E. Safety and Relief Valves

1. During reactor power operating conditions and whenever the reactor coolant pressure is greater than 90 psig and temperature

Bup Modes 1, 2 and 3

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

2. The following additional leakage limits shall be met until the recirculation piping indications have been resolved.

   Whenever the reactor is at operating pressure, the following will apply to unidentified leakage:

   a. If a 1 gpm increase over the previous 4 hours occurs or when leakage equals 3 gpm total, an investigation of the cause of the leakage increase will be performed. This investigation should consist of taking drywell air and water samples, and a review of any previous plant evolutions to the extent necessary to determine the source of leakage.

   b. If leakage equals 4 gpm, a containment inspection will be conducted to determine the source of leakage.

E. Safety and Relief Valves

A minimum of 1/2 of all safety valves shall be bench checked or replaced with a bench checked valve each refueling outages.

TSup 3.6.E LCO

18 mos

FOR INFORMATION ONLY

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

B up Applic.

greater than 320°F, all nine of the safety valves shall be operable. The solenoid activated pressure valves shall be operable as required by Specification 3.5.D.

TS up 3.6.E LCO

B up 3/4.5, "ECCS", ADS

2. If Specification 3.6.E.1 is not met, an orderly shutdown shall be initiated and the reactor coolant pressure and temperature shall be less than or equal to 90 psig and less than or equal to 320° F within 24 hours.

TS up 3.6.E&F Actions

Hot-12 cold-24

F. Structural Integrity

The structural integrity of the primary system boundary shall be maintained at the level required by the ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components".

TS up 3.6.N

Components of the primary system boundary whose inservice examination reveals the absence of flaw indications or flaw

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

The popping point of the safety valves shall be set as follows:

Number of Valves	Set Point (Psig)
1	1135*
2	1240
2	1250
2	1260
2	1260

The allowable set point error for each valve is plus or minus 1%.

B up 3.6.E LCO

All relief valves shall be checked for set pressure each refueling outage. The set pressures shall be:

18 mo

Valve No.	Set Point (psig)
203-3A	1124*
203-3B	1101
203-3C	1101
203-3D	1124
203-3E	1124

* Target rock combination safety/relief valve.

The allowable setpoint error for each valve is plus or minus 1%.

TS up 3.6.F LCO 4.6.F

F. Structural Integrity

1. Beginning November 1, 1978, and updated every 40 months thereafter, the component inservice inspection program shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been given by the NRC pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

TS up 4.6.N

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

indications not in excess of the allowable indication standards of this Code are acceptable for continued service. Plant operation with components which have inservice examination flaw indication(s) in excess of the allowable indication standards of the Code shall be subject to NRC approval.

a. Components whose inservice examination reveals flaw indication(s) in excess of the allowable indication standards of the ASME Code, Section XI, are unacceptable for continued service unless the following requirements are met:

TS up 4.0.E

(i) An analysis and evaluation of the detected flaw indication(s) shall be submitted to the NRC that demonstrate that the component structural integrity justifies continued service. The analysis and evaluation shall follow the procedures outlined in Appendix A, "Evaluation of Flaw Indications", of ASME Code, Section XI.

(ii) Prior to the resumption of service, the NRC shall review the analysis and evaluation and

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

either approve resumption of plant operation with the affected component or require that the component be repaired or replaced.

b. For components approved for continued service in accordance with paragraph "a" above, reexamination of the area containing the flaw indication(s) shall be conducted during each scheduled successive inservice inspection. An analysis and evaluation shall be submitted to the NRC following each inservice inspection. The analysis and evaluation shall follow the procedures outlined in Appendix A, "Evaluation of Flaw Indications", of ASME Code, Section XI, and shall reference prior analyses submitted to the NRC to the extent applicable. Prior to resumption of service following each inservice inspection, the NRC shall review the analysis and evaluation and either approve resumption of plant operation with

Bup 4.0.E

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

the affected component or require that the component be repaired or replaced.

c. Repair or replacement of components, including reexaminations, shall conform with the requirements of the ASME Code, Section XI. In the case of repairs, flaws shall be either removed or repaired to the extent necessary to meet the allowable indication standards specified in ASME Code, Section XI.

B up 4.0.E

B up 3.6.B LCO

G. Jet Pumps

1. Whenever the Reactor is in the Startup/Hot Standby or Run modes, all jet pumps shall be intact and all operating jet pumps shall be operable. If it is determined that a jet pump is inoperable, an orderly shutdown shall be initiated and the reactor shall be in a ~~Cold Shutdown~~ HOT condition within ~~24~~ 12 hours.

B up modes 1 & 2

B up 3.6.B Actions

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

B up 4.6.B

G. Jet Pumps

1. Whenever there is recirculation flow with the reactor in the Startup/Hot Standby or Run modes, jet pump integrity and operability shall be checked ~~daily~~ 24 hr by verifying that the following two conditions do not occur simultaneously:

a. The recirculation pump flow differs by more than 10% from the established speed-flow characteristics.

B up 4.6.B 1.a

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

BWP 3.6.B LCO & ACTIONS

2. Flow indication from each of the twenty jet pumps shall be verified prior to initiation of reactor startup from a cold shutdown condition.

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

BWP 4.6.B.1.b

b. The indicated total core flow is more than 10% greater than the core flow value derived from established power-core flow relationships.

BWP 4.6.B.2

2. ~~Additionally, when~~ operating with one recirculation pump ~~with the equalizer valves closed,~~ the diffuser to lower plenum differential pressure shall be checked ~~daily~~ and the ~~differential pressure~~ of any jet pumps in the idle loop shall not vary by more than 10% from established patterns.

indicated flow

TSWP 4.6.B.2

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

3. During Dual Loop Operation, the indicated core flow is the sum of the flow indication from each of the twenty jet pumps. During Single Loop Operation (SLO), the indicated core flow must be conservatively adjusted based on station procedures.

e

4. If flow indication failure occurs for two or more jet pumps, immediate corrective action shall be taken. If flow indication for all but one jet pump cannot be obtained within 12 hours an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

BWP 3.6.B Actions & LCO

H. Recirculation Pump Flow Limitations

1. Whenever both recirculation pumps are in operation, pump speeds shall be maintained within 10% of each other when power level is greater than 80% and within 15% of each other when power level is less than 80%.

BWP 3.6.C LCO

2. If specification 3.6.H.1 cannot be met, one recirculation pump shall be tripped.

BWP 3.6.C Action 2

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

D

3. The baseline data required to evaluate the conditions in Specifications 4.6.G.1 and 4.6.G.2 will be acquired each operating cycle.

BWP 4.6.C

H. Recirculation Pump Flow Limitations

Recirculation pumps speed shall be checked daily for mismatch.

24 hrs

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)	4.6 SURVEILLANCE REQUIREMENT (Cont'd.)
3. During Single Loop Operation for more than 24 hours, the following restrictions are required:	3. Deleted
	TS up 3.6.A, Action 1
a. The recirculation pump in the idle loop shall be electrically prohibited from starting except to permit testing in preparation for returning to service.	TS up 3.6.A, Action 1.e
b. The flow biased RBM Rod Block LSSS shall be reduced by 4.0% (Specification 3.2.C.1);	TS up 3.6.A, Action 1.c
c. The flow biased APRM Rod Block LSSS shall be reduced by 3.5% (Specification 2.1.B);	TS up 3.6.A. Action 1.c
d. The flow biased APRM scram LSSS shall be reduced by 3.5% (Specification 2.1.A.1);	TS up 3.6.A, Action 1.c
e. The MCPR Safety Limit shall be increased by 0.01 (Specification 1.1.A);	TS up 3.6.A, Action 1.a
f. The rated flow MCPR Operating Limit shall be increased by 0.01 (Specification 3.5.L.2);	TS up 3.6.A, Action 1.b

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LIMITING CONDITION FOR OPERATION (Cont'd.)

g. The MAPLHGR Operating Limit shall be reduced by the appropriate multiplicative factor from the Core Operating Limits Report (Specification 3.5.I). If, concurrently, one Automatic Pressure Relief Subsystem relief valve is out-of-service, the MAPLHGR Operating Limit shall be reduced by the appropriate multiplicative factor from the Core Operating Limits Report.

BWP 3.6.A, Action 1.d

e

BWP 3.6.A, Action 2

4. With no reactor coolant system recirculation loops in operation, reduce core thermal power to less than 25% of rated within 2 hours and place the ~~unit in hot shutdown~~ within the following 12 hours.

Startup in 6hrs

6

5. Idle Recirculation Loop Startup

An idle recirculation pump shall not be started unless the temperature differential between the reactor vessel steam space coolant and the bottom head drain line coolant is less than or equal to 145°F*, and:

BWP 3.6.D, LCO

a. When both pumps have been idle, unless the temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel is less than or equal to 50°F, or

BWP 3.6.D.1 LCO

b. When only one loop has been idle, unless the temperature differential between the reactor coolant within the idle and operating recirculation loops is less than or equal to 50°F and the speed of the operating pump is less than or equal to 43% of rated pump speed.

BWP 3.6.D.2 LCO

I. Snubbers (Shock Suppressors)

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

5. Idle Recirculation Loop Startup

The temperature differentials and flow rates shall be determined to be within the limits within 15 minutes prior to startup of an idle recirculation loop.

BWP 4.6.D

BWP 3/4.8.F

I. Snubbers (Shock Suppressors)

The following surveillance requirements apply to safety related snubbers.

*Only applicable with reactor pressure vessel steam space pressure ≥ 25 psig.

BWP 3.6.D, Footnote (a)

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

1. During all modes of operation except cold shutdown and refuel, all safety related snubbers shall be operable except as noted in Specification 3.6.I.2 through 3.6.I.4.

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TSUP 3/4.8.F

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

1. Visual Inspection

An independent visual inspection shall be performed on the safety related hydraulic and mechanical snubbers in accordance with the schedule below.

a. All hydraulic snubbers whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected. This inspection shall include, but not necessarily be limited to, inspection of the hydraulic fluid reservoir, fluid connections, and linkage connection to the piping and anchor to verify snubber operability.

b. All mechanical snubbers shall be visually inspected. This inspection shall consist of, but not necessarily be limited to, inspection of the snubber and attachments to the piping and anchor for indications of damage or impaired operability.

3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

2. From and after the time a snubber is determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is sooner made operable or replaced.

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

No. of Snubbers Found Inoperable During Inspection Interval	Next Required Inspection Interval
0	18 months plus or minus 25%
1	12 months plus or minus 25%
2	6 months plus or minus 25%
3,4	124 days plus or minus 25%
5,6,7	62 days plus or minus 25%
8 or more	31 days plus or minus 25%

The required inspection interval shall not be lengthened more than one step at a time.

Snubbers may be categorized in two groups, "accessible" or "inaccessible," based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.

2. Functional Testing

a. Once each refueling cycle, a representative sample of approximately 10% of the hydraulic snubbers shall be functionally tested for operability, including:

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BUP 3/4.8.F

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

(i) Activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension and compression.

(ii) Snubber bleed, or release rate, where required, is within the specified range in compression or tension.

For each unit and subsequent unit found inoperable, an additional 10% of the hydraulic snubbers shall be tested until no more failures are found or all units have been tested.

b. Once each refueling cycle, a representative sample of approximately 10% of the mechanical snubbers shall be functionally tested for operability. The test shall consist of two parts:

BUP 3/4.8.F

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3.6 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.6 SURVEILLANCE REQUIREMENT
(Cont'd.)

(i) Verification that the force that initiates free movement of the snubber in either tension or compression is less than the specified maximum breakaway friction force.

(ii) Verify that the activation (restraining action) is achieved within the specified range of acceleration or velocity, as applicable based on snubber design in both tension and compression.

For each unit and subsequent unit found inoperable, an additional 10% of the mechanical snubbers shall be so tested until no more failures are found or all units have been tested.

c. In addition to the regular sample, snubbers which failed the previous functional test shall be retested during the next test period. If a spare snubber has been installed in place of a failed snubber, then both the failed snubber (if it is repaired and installed in another position) and the spare snubber shall be retested. Test results of these snubbers may not be included for the resampling.

TSUP
3/4.8.F

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

3. If the requirements of 3.6.I.1 and 3.6.I.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in cold shutdown or refuel condition within 36 hours.

4. If a snubber is determined to be inoperable while the reactor is in the cold shutdown or refuel mode, the snubber shall be made operable or replaced prior to reactor startup.

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

3. When a snubber is deemed inoperable, a review of all pertinent facts shall be conducted to determine the snubber mode of failure and to decide if an engineering evaluation should be performed on the supported system or components. If said evaluation is deemed necessary, it will determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

4. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause will be evaluated and, if determined to be a generic deficiency, all snubbers of the same design subject to the same defect shall be functionally tested.

BUP
3/4.8.F

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3.6 LIMITING CONDITION FOR OPERATION (Cont'd.)

5. Snubbers may be added or removed from safety related systems without prior license amendment.

4.6 SURVEILLANCE REQUIREMENT (Cont'd.)

5. Snubber service life monitoring shall be followed by existing station record systems, including the central filing system, maintenance files, safety related work packages, and snubber inspection records. The above record retention methods shall be used to prevent the hydraulic snubbers from exceeding a service life of 10 years and the mechanical snubbers from exceeding a service life of 40 years (lifetime of the plant).

BWP 3/4.8.F

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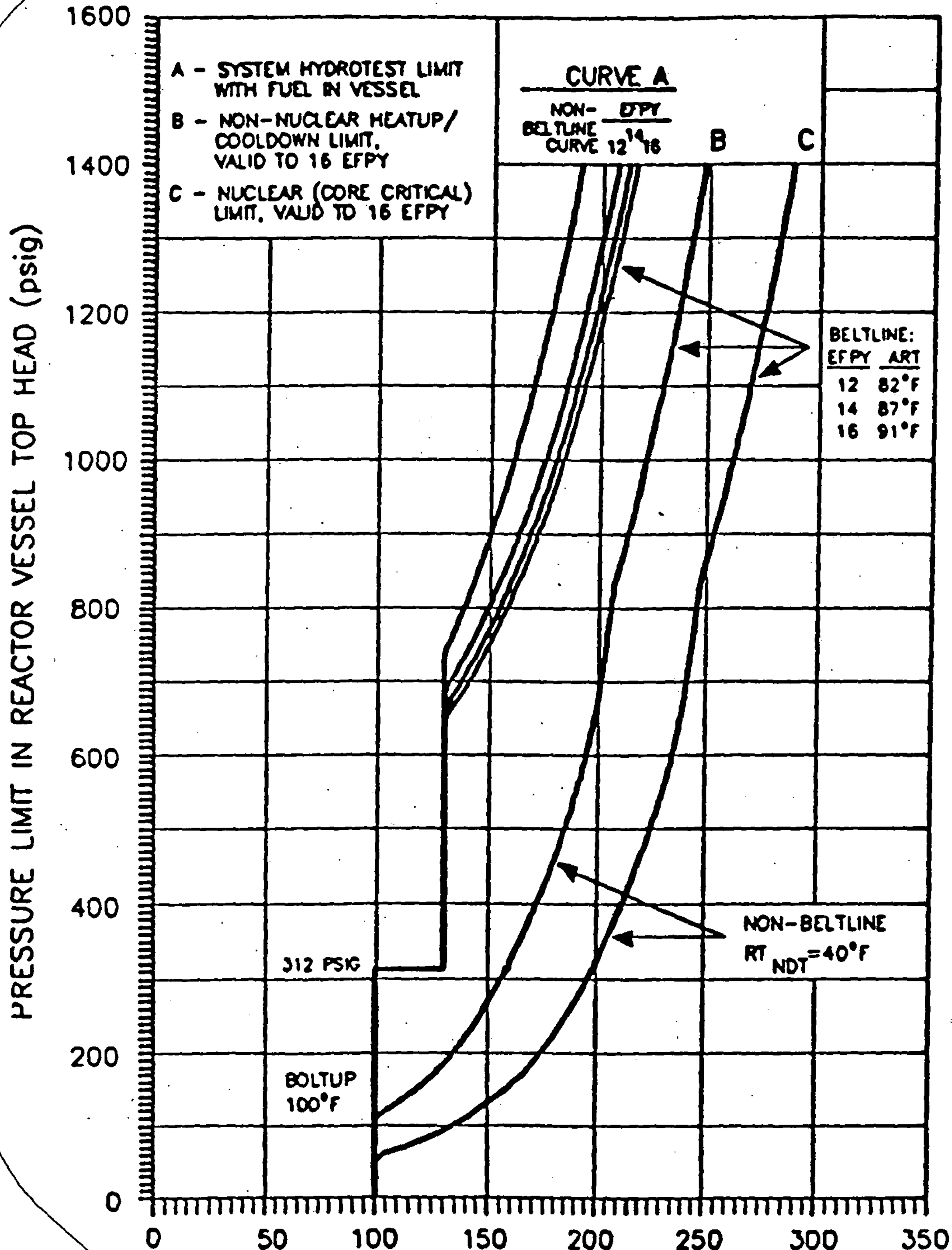
MINIMUM REACTOR VESSEL METAL TEMPERATURE (°F)



MINIMUM REACTOR VESSEL METAL TEMPERATURE (°F)

FIGURE 3.6.1.

TSUP FIGURE 3.6.K-1

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QUAD-CITIES
DPR-30

3.6/4.6 PRIMARY SYSTEM BOUNDARY

LIMITING CONDITIONS FOR OPERATION

Q

Applicability:

Applies to the operating status of the reactor coolant system.

Objective:

To assure the integrity and safe operation of the reactor coolant system.

SURVEILLANCE REQUIREMENTS

Q

Applicability:

Applies to the periodic examination and testing requirements for the reactor coolant system.

Objective:

To determine the condition of the reactor coolant system and the operation of the safety devices related to it.

SPECIFICATIONS

A. Thermal Limitations

1. Except as indicated in Specification 3.6.A.2 below, the average rate of reactor coolant temperature change during normal heatup or cooldown shall not exceed 100°F/hr when averaged over a 1-hour period.

MA[illegible]

BUP 3.6.K.1 & 2
LCO

2. A step reduction in reactor coolant temperature of 240°F is permissible so long as the limit in Specification 3.6.A.3 below is met.

Q

3. At all times, the shell flange to shell temperature differential shall not exceed 140°F.

Q

4. The recirculation pump in an idle recirculation loop shall not be started unless the coolant in that loop is within 50°F of the operating loop coolant temperature.

BUP 3.6.D.2
LCO

A. Thermal Limitations

BUP
4.6.K.1

1. During heatups and cooldowns the following temperatures shall be ~~permanently recorded~~ determined at ~~15~~ 30-minute intervals:

a. reactor vessel shell,

b. reactor vessel shell flange, and

c. recirculation loops A and B.

BUP 4.6.K.1, 2 & 3

2. The temperatures listed in Specification 4.6.A.1 shall be permanently recorded subsequent to a heatup or cooldown at 15-minute intervals until three consecutive readings at each given location are within 5 degrees of each other.

See Revised BUP 4.6.K.2

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DPR-30

TS up 4.6.K

Pressurization Temperature

TS up 3.6.K, Appl.

1. The reactor vessel shall be vented and power operation shall not be conducted unless the reactor vessel temperature is equal to or greater than that shown in Figure 3.6-1.

TS up 3.6.K, LCO & ACTIONS

e

TS up 3.6.K, LCO

Operation for hydrostatic or leakage tests (Curve A), during heatup or cooldown (Curve B), or with the core critical (Curve C) shall be conducted only when the reactor vessel temperature is equal to or above that shown in the appropriate curve of Figure 3.6-1. Figure 3.6-1 is effective through 16 EFPY. At least six months prior to 16 EFPY new curves will be submitted.

e

TS up 3.6.K.4 LCO

2. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is ≥ 100°F.

C. Coolant Chemistry

1. The steady-state radioiodine concentration in the reactor coolant shall not exceed 5 µCi of I-131 dose equivalent per gram of water.

0.2

TS up 3.6.J, LCO

B. Pressurization Temperature

1. Reactor vessel shell temperature and reactor coolant pressure shall be permanently recorded at 15-minute intervals whenever the shell temperature is below 220°F and the reactor vessel is not vented.

30

determined

e

e

TS up 3.6.K Appl

2. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program shall conform to ASTM E 185-66. The monitors and samples shall be removed and tested in accordance with the guidelines set forth in 10CFR50 Appendix H to experimentally verify the calculated values of integrated neutron flux that are used to determine the NDTT for Figure 3.6-1.

e

TS up 4.6.K.3

e

TS up 4.6.K.4.b

3. When the reactor vessel head bolting studs are tightened or loosened, the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.

~~within 30 min~~

e

C. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radioactive iodines of I-131 through I-135 during power operation. In addition, when chimney monitors indicate an increase in radioactive gaseous effluents of 25% or 5000 µCi/sec. whichever is greater, during steady-state reactor operation, a reactor coolant sample shall be taken and analyzed for radioactive iodines.

TS up 4.6.J, Table 4.6.J-1

15

100,000

TS up 4.6.J, Table 4.6.J-1

b. An isotopic analysis of a reactor coolant sample shall be made at least once per month.

TS up 4.6.J Table 4.6.J-1

c. Whenever the steady-state radioiodine concentration of prior operation is greater than 1% but less

TS up 3.6.J, Actions

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than 10% of Specification 3.6.C.1, a sample of reactor coolant shall be taken within 24 hours of any reactor startup and analyzed for radioactive iodines of I-131 through I-135.

TS ud 3.6.J, Actions

2. The reactor coolant water shall not exceed the following limits with steaming rates less than 100,000 lb/hr except as specified in Specification 3.6.C.3:

TS up 3.6.I, Applicability

conductivity 2 μmho/cm

TS up 3.6.I, LCO

chloride ion 0.1 ppm

mode dependent limits

3. For reactor startups, the maximum value for conductivity shall not exceed 10 μmho/cm, and the maximum value for chloride ion concentration shall not exceed 0.1 ppm for the first 24 hours after placing the reactor in the power operating condition.

TS up 3.6.I.3 Actions

0.5

TS up mode 1

4. Except as specified in Specification 3.6.C.3 above, the reactor coolant water shall not exceed the following limits with steaming rates greater than or equal to 100,000 lb/hr:

conductivity 10 μmho/cm

chloride ion 1.0 ppm

TS up 3.6.I, Actions

5. If Specification 3.6.C.1, 3.6.C.2, 3.6.C.3, or 3.6.C.4 is not met, an orderly shutdown ~~shall be initiated~~.

TS up 3.6.I, Actions

TS up 3.6.H Applicability

D. Coolant Leakage

1. Any time irradiated fuel is in the reactor vessel and reactor coolant temperature is above 212° F, reactor coolant leakage into the primary containment from unidentified sources shall not exceed 5 gpm. In addition, the total reactor coolant system leakage into the primary containment shall not exceed 25 gpm.

TS ..6.H.3

TS up 3.6.H.2 LCO

through I-135.

d. Whenever the steady-state radioiodine concentration of prior operation is greater than 10% of Specification 3.6.C.1, a sample of reactor coolant shall be taken prior to any reactor startup and analyzed for radioactive iodines of I-131 through I-135 as well as the coolant sample and analyses required by Specification 4.6.C.1.c above.

TS up 3.6.J, Actions

2. During startups and at steaming rates below 100,000 lb/hr, a sample of reactor coolant shall be taken every 4 hours and analyzed for conductivity and chloride content.

12 hrs as per Table 3.6.I-1

TS up 4.6.I.2, 4.6.I.3

See TS up 4.6.I.3

3. a. With steaming rates greater than or equal to 100,000 lb/hr, a reactor coolant sample shall be taken at least every 96 hours and when the continuous conductivity monitors indicate abnormal conductivity (other than short-term spikes) and analyzed for conductivity and chloride ion content.

4

TS up 4.6.I.3

b. When the continuous conductivity monitor is inoperable, a reactor coolant sample should be taken at least daily and analyzed for conductivity and chloride ion content.

TS up 4.6.I.3

every 4 hours

D. Coolant Leakage

TS up 4.6.H.1

Reactor coolant system leakage shall be checked by the ~~sump and air sampling system.~~ Sump flow monitoring and recording shall be performed once per shift. Air sampling shall be performed once per day.

TS up 4.6.H.1, 4.6.H.2

Shifts, not to exceed 12 hours

12 hours

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2. Both the sump and air sampling systems shall be operable during reactor power operation. From and after the date that one of these systems is made or found to be inoperable for any reason, reactor power operation is permissible only during the succeeding 7 days.

3. If the conditions in 1 or 2 above cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

TSUP 3.6.H, Actions

Hot 12, Cold 24

TSUP 3.6.E, LCO

TSUP 3.6.E, Modes 1,2,3

18 month

E. Safety and Relief Valves

1. Prior to reactor startup for power operation, during reactor power operating conditions, and whenever the reactor coolant pressure is greater than 90 psig and temperature greater than 320° F, all nine of the safety valves shall be operable. The solenoid-activated pressure valves shall be operable as required by Specification 3.5.D.

TSUP 3.6.E, Applicability

TSUP 3.6.E, LCO

TSUP 3/4.5, "ECCS"

2. If Specification 3.6.E.1 is not met, the reactor shall remain shut down until the condition is corrected or, if in operation, an orderly shutdown shall be initiated and the reactor coolant pressure and temperature shall be below 90 psig and 320° F within 24 hours.

TSUP (1E) 3.6.E Actions HOT-12, COLD-24

E. Safety and Relief Valves

A minimum of 1/2 of all safety valves shall be bench checked or replaced with a bench checked valve each refueling outage. The popping point of the safety valves shall be set as follows:

Number of Valves	*Setpoint (psig)*
1	1135[1]
2	1240
2	1250
4	1260

The allowable setpoint error for each valve is ± 1%.

All relief valves shall be checked for set pressure each refueling outage. The set pressures shall be:

18 month

Number of Valves	*Setpoint (psig)*
1	≤1135[1]
2	≤1115
2	≤1135

[1]Target Rock combination safety/relief valve.

TSUP 4.6.F & 3.6.F, LCO

F. Structural Integrity

The structural integrity of the primary system boundary shall be maintained at the level required by the ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components", 1974 Edition, Summer 1975 Addenda (ASME Code Section XI).

TSUP 3.6.N

TSUP 4.0.E defines

F. Structural Integrity

The nondestructive inspections listed in Table 4.6-1 shall be performed as specified in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, 1971 Edition, Summer 1971 Addenda. The results obtained from compliance with this specification will be evaluated after 5 years and the conclusions will be reviewed with the NRC.

TSUP 4.6.N & 4.0.E

Components of the primary system boundary whose inservice examination reveals the absence of flaw indications or flaw indications not in excess of the allowable indication standards of this Code are acceptable for continued service. Plant operation with components which have inservice examination flaw indication(s) in excess of the allowable indication standards of the Code shall be subject to NRC approval.

TSUP
4.0.E

1. Components whose inservice examination reveals flaw indication(s) in excess of the allowable indication standards of the ASME Code, Section XI, are unacceptable for continued service unless the following requirements are met:

   a. An analysis and evaluation of the detected flaw indication(s) shall be submitted to the NRC that demonstrate that the component structural integrity justifies continued service. The analysis and evaluation shall follow the procedures outlined in Appendix A, "Evaluation of Flaw Indications", of ASME Code, Section XI.

   b. Prior to the resumption of service, the NRC shall review the analysis and evaluation and either approve resumption of plant operation with the affected component or require that the component be repaired or replaced.

2. For components approved for continued service in accordance with paragraph 1, reexamination of the area containing the flaw indication(s) shall be conducted during each scheduled successive inservice inspection. An analysis and evaluation shall be submitted to the NRC following each inservice inspection. The analysis and evaluation shall follow the procedures outlined in Appendix A, "Evaluation of Flaw Indications", of ASME Code, Section XI, and shall reference prior analyses submitted to the NRC to the extent applicable. Prior to resumption of service following each inservice inspection, the NRC shall

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review the analysis and evaluation and either approve resumption of plant operation with the affected component or require that the component be repaired or replaced.

3. Repair or replacement of components, including reexaminations, shall conform with the requirements of the ASME Code, Section XI. In the case of repairs, flaws shall be either removed or repaired to the extent necessary to meet the allowable indication standards specified in ASME Code, Section XI.

TS ucl
4.0.E

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G. Jet Pumps

1. Whenever the reactor is in the ~~Startup/Hot Standby or Run~~ modes, all jet pumps shall be intact, and all operating jet pumps shall be operable. If it is determined that a jet pump is inoperable, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

Mode 1,2
OPERABLE
HOT
12
TSUP 3.6.B LCO & ACTIONS

2. Flow indication from 19 of the 20 jet pumps shall be verified prior to initiation of reactor startup from a cold shutdown condition.

TSUP 3.6.B, LCO, ACTIONS
footnote (a)
18
indicated flow

3. The indicated core flow is the sum of the flow indication from each jet pump with operable flow indication. In addition, for any jet pump with inoperable flow indication, the flow indication from the companion jet pump on the same jet pump riser shall be summed a second time to compensate for the flow through the jet pump with inoperable flow indication. If flow indication failure occurs for three or

G. Jet Pumps

TSUP 4.6.B

1. Whenever there is recirculation flow with the reactor in the ~~Startup/Hot Standby or Run modes~~, jet pump integrity and operability shall be checked daily by verifying that two of the following conditions do not occur simultaneously:

Mode 1,2
24 hr

a. The recirculation pump flow differs by more than 10% from the established speed-flow characteristics.

TSUP 4.6.B1.a

b. The indicated total core flow is more than 10% greater than the core flow value derived from established core plate DP/core flow relationships.

TSUP 4.6.B.1.b

c. Individual jet pump flow for any jet pump differs by more than 10% from established flow to average loop jet pump flow characteristics.

TSUP 4.6.B.1.c

2. Additionally, when operating with one recirculation pump with the ~~equalizer valves closed~~, the diffuser to lower plenum differential pressure shall be checked daily, and the ~~differential pressure~~ of any jet pump in the idle loop shall not vary by more than 10% from established patterns.

TSUP 4.6.B.2
TSUP 4.6.B.2.c

3. The baseline data required to evaluate the conditions in Specifications 4.6.G.1 and 4.6.G.2 will be acquired each operating cycle.

more jet pumps, immediate corrective action shall be taken. If flow indication for all but two jet pumps cannot be obtained within 12 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

HOT

12

TS up 3.6.B, Action 2

4. If flow indication failure occurs for both jet pumps on the same jet pump riser, immediate corrective action shall be taken. If flow indication for at least one of the jet pumps cannot be obtained within 12 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

HOT

12

TS up 3.6.B, Action 3

5. If flow indication failure occurs for both calibrated (double-tap) jet pumps on the same recirculation loop, immediate corrective action shall be taken. If flow indication for at least one of the jet pumps cannot be obtained within 12 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.

Hot

12

TS up 3.6.B, Action 4

H. Recirculation Pump Flow Limitations

1. Whenever both recirculation pumps are in operation, pump speeds shall be maintained within 10% of each other when power level is greater than 80% and within 15% of each other when power level is less than 80%.

TS up 3.6.C LCO

2. If Specification 3.6.H.1 cannot be met, one recirculation pump shall be tripped.

TS up 3.6.C, ACTION 2

H. Recirculation Pump Flow Limitations

Recirculation pumps speed shall be checked daily for mismatch.

every 24 hrs

TS up 4.6.C

FOR INFORMATION ONLY

3. During Single Loop Operation for more than 24 hours, the following restrictions are required:

TS up 3.6.A, Action 1

a. The MCPR Safety Limit shall be increased by 0.01 (T.S. 1.1A);

TS up 3.6.A, Action 1.a

b. The MCPR Operating Limit, as specified in the CORE OPERATING LIMITS REPORT, shall be increased by 0.01 (T.S. 3.5.K);

TS up 3.6.A, Action 1.b

c. The flow biased APRM Scram and Rod Block Setpoints shall be reduced by 3.5% to read as follows:

TS up 3.6.A, Action 1.c

T.S. 2.1.A.1;
S $\leq$ .58 WD + 58.5

T.S. 2.1.A.1;*
S $\leq$ (.58 WD + 58.5) FRP/MFLPD

T.S 2.1.B;
S $\leq$ .58 WD + 46.5

T.S. 2.1.B; *
S $\leq$ (.58 WD + 46.5) FRP/MFLPD

T.S. 3.2.C (Table 2.1-3);*
APRM upscale $\leq$ (.58 WD + 46.5) FRP/MFLPD

* In the event that MFLPD exceeds FRP.

d. The flow biased RBM Rod Block setpoints, as specified in the CORE OPERATING LIMITS REPORT, shall be reduced by 4.0%.

TS up 3.6.A, Action 1.c

e. The recirculation pump in the idle loop shall be electrically prohibited from starting except to permit testing in preparation for returning to service.

TSUP 3.6.A, Action 1.e

Bup 3.6.A, Action 2

startup in 6 hours

6

4. With no reactor coolant system recirculation loops in operation, reduce core thermal power to less ~~then 25% of rated~~ within 2 hours and place the unit in hot shutdown within the following 12 hours.

5. Idle Recirculation Loop Startup

An idle recirculation pump shall not be started unless the temperature differential between the reactor vessel steam space coolant and the bottom head drain line coolant is less than or equal to 145°F*, and:

Bup 3.6.D, LCO

a. When both pumps have been idle, unless the temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel is less than or equal to 50°F, or

Bup 3.6.D.1 LCO

b. When only one loop has been idle, unless the temperature differential between the reactor coolant within the idle and operating recirculation loops is less than or equal to 50°F and the speed of the operating pumps is less than or equal to 45% of rated pump speed.

Bup 3.6.D.2 LCO

5. Idle Recirculation Loop Startup

The temperature differentials and flow rates shall be determined to be within the limits within 15 minutes prior to startup of an idle recirculation loop.

Bup 4.6.D

*Only applicable with reactor pressure vessel steam space pressure ≥ 25 psig.

Bup 3.6.D, footnote (a)

I. Shock Suppressors (Snubbers)

1. During all modes of operation except Shutdown and Refuel, all snubbers on safety related piping systems shall be operable except as noted in 3.6.I.2 following.

2. From and after the time that a snubber is determined to be inoperable, continued reactor operation is permissible during the succeeding 72 hours only if the snubber is sooner made operable.

3. If the requirements of 3.6.I.1 and 3.6.I.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.

4. If a snubber is determined to be inoperable while the reactor is in the Shutdown or Refuel mode, the snubber shall be made operable prior to reactor startup.

I. Shock Suppressors (Snubbers)

The following surveillance requirements apply to all snubbers on safety related piping systems.

1. Visual inspections shall be performed in accordance with the following schedule utilizing the acceptance criteria given by Specification 4.6.I.2.

Number of Snubbers Found Inoperable During Inspection or During Inspection Interval	Next Required Inspection Interval
0	18 months ±25%
1	12 months ±25%
2	6 months ±25%
3,4	124 days ±25%
5,6,7	62 days ±25%
≥8	31 days ±25%

The required inspection interval shall not be lengthened more than one step at a time.

Snubbers may be categorized in two groups, 'accessible' or 'inaccessible' based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.

RELOCATED
TSUP 3/4.8.E

Snubber service life monitoring shall be followed by the snubber surveillance inspection records and maintenance history records. The above record retention method shall be used to prevent the snubbers from exceeding a service life.

2. Visual inspections shall verify:

   a. There are no visible indications of damage or impaired operability, and

   b. Attachments to the foundation or supporting structure are secure.

3. Once each refueling cycle a representative sample of 10% of the total of each type of snubber in use in the plant shall be functionally tested either in place or in a bench test. For each snubber that does not meet the functional test criteria, an additional 10% of that type of snubber shall be functionally tested.

4. The mechanical snubber functional tests shall verify:

   a. That the breakaway force that initiates free movement of the snubber rod in either tension or compression is less than the specified maximum force.

   b. That the activation (restraining action) is achieved within the specified range of acceleration in both tension and compression.

BUP 3/4.8.F

5. When a snubber is deemed inoperable, a review shall be conducted to determine the mode of failure and to decide if an engineering evaluation should be performed. If the engineering evaluation is deemed necessary, it will determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

6. If any snubber selected for functional testing either fails to lockup or fails to move, i.e., frozen in place, the cause will be evaluated and if determined to be generically deficient all snubbers of the same design, subject to the same defect shall be functionally tested.

7. In addition to the regular sample, snubbers which failed the previous functional test shall be retested during the next test period. If a spare snubber has been installed in place of a failed snubber, then both the failed snubber (if it is repaired and installed in another position) and the spare snubber shall be retested. Test results of these snubbers may not be included for the resampling.

Bup
3/4.8.F

PRESSURE LIMIT AS A FUNCTION OF VESSEL METAL TEMPERATURE

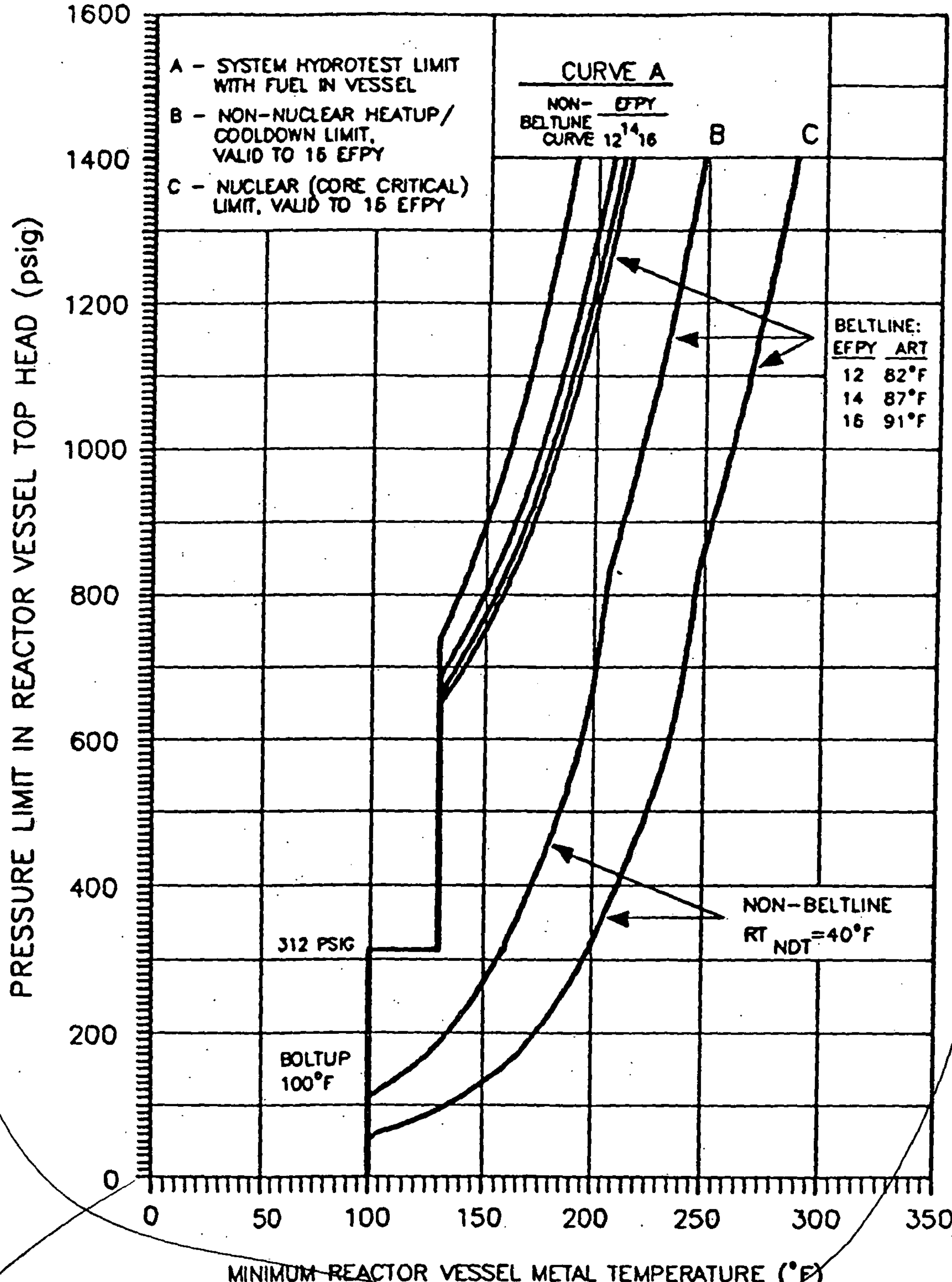

FIGURE 3.6-1

BWP
FIGURE 3.6.K-1

TABLE 4.6-1

INSERVICE INSPECTION REQUIREMENTS FOR QUAD-CITIES

Category	Component Parts to be Examined	Examination Method	Frequency of Examination	Examinations[1]
A	Longitudinal and circumferential shell welds in core region			Note: Not applicable with present plant design
B	Longitudinal and circumferential welds in shell (other than those of categories A and C) and meridional and circumferential seam welds in bottom head and closure head (other than those of Category C)	Volumetric	During each 10-year inspection interval (for 10% of each longitudinal and meridional 5% circumferential length seam)	Accessible top 10 feet of vertical vessel weld in two places (100% inspected in 10 years for approximately 2 feet each refueling outage) 10% of meridional seam welds in vessel closure head and 5% of circumferential welds in vessel closure head Note: Bottom head closure not applicable with present plant design
C	Vessel-to-flange and head-to-flange circumferential welds	Volumetric	Cumulative 100% coverage at end of 10-year interval	Equivalent to 10% of vessel-to-flange and head-to-flange circumferential weld are a each refueling outage
D	Primary nozzle-to-vessel and nozzle-to-head welds and nozzle-to-vessel, nozzle-to-head inside radiused section	Volumetric	Cumulative 100% coverage at end of 10-year interval	Nozzle welds: Recirculation outlet[2]: once every 5 years Recirculation inlet[10]: at least once each refueling outage Core spray inlet[2]: once every 5 years Control rod drive return[1]: once every 10 years Standby liquid control[1]: once every 10 years Head instrumentation[2]: once every 5 years Head spray inlet[1]: once every 10 years

e

Bud
4.0.E

TABLE 4.6-1 (Cont'd)

Category	Component Parts to be Examined	Examination Method	Frequency of Examination	Examinations[1]
E	Partial penetration welds including control rod drive penetrations and vessel instrumentation nozzles	Visual	The examinations performed during each inspection interval shall cover at least 25% of each group of penetrations of comparable size and function	The area surrounding each penetration shall be examined for evidence of leakage during pressure testing
F	Primary nozzles to safe-end welds	Visual, surface, and volumetric	Cumulative 100% coverage at end of 10-year interval	Safe-ended nozzles: Recirculation outlet[2]: once every 5 years Recirculation inlet[10]: at once each refueling outage Core spray inlet[2]: once every 5 years Control rod drive[1]: once every 10 years Standby liquid control[1]: once every 10 years Head instrumentation[2]: once every 5 years Head spray inlet[1]: once every 10 years
G-1	Closure studs and nuts	Volumetric and visual or surface	Cumulative 100% coverage at end of 10-year interval	100% of vessel studs and nuts will be inspected each refueling outage
	Ligaments between threaded stud holes	Volumetric	Cumulative 100% coverage at end of 10-year interval	Equivalent to 10% of ligaments each refueling outage. Examination of bushings, threads, and ligaments in base material of flanges may be performed from the face of the flange and are required to be examined only when the connection is disassembled.
	Closure washers, bushings	Visual	Cumulative 100% coverage at end of 10-year interval	Equivalent to 10% of washers each refueling outage, bushings not applicable with present design.
	Pressure-retaining bolting ≥2 inch diameter	Visual and volumetric	Cumulative 100% coverage at end of 10-year interval	Equivalent to 10% of recirculating pump bolts each refueling outage.

BUP 4.0.E

TABLE 4.6-1 (Cont'd)

Category	Component Parts to be Examined	Examination Method	Frequency of Examination	Examinations[1]
G-2	Pressure-retaining bolting <2 inch diameter	Visual	Cumulative 100% of coverage at end of 10-year interval	Bolting will be examined when bolting is removed or when the bolted connected is broken or disassembled. For bolting which is not removed or where the bolted connection is not broken, the inspection will consist of a visual examination to detect signs of distress or evidence of leaking.
H	Integrally welded vessel supports	Volumetric	During 10-year interval	10% (approximately 8 ft) of lineal feet of vessel support skirt welding in 10th year.
I	Closure head cladding	Visual and surface or volumetric	During 10-year interval	During the 10-year interval, at least six patches (each 36 in^2) evenly distributed in the closure head.
	Vessel cladding	Visual	During 10-year interval	6 patches (each 36 in^2) evenly distributed in the accessible sections of the vessel shell shall be examined.

TSUP 4.0.E

TABLE 4.6-1 (Cont'd)

Category	Component Parts to be Examined	Examination Method	Frequency of Examination	Examinations[1]		
				System	Pipe Sizes	Unit 2 Total Welds
J	Circumferential and longitudinal pipe welds (Refer to Note 2 at the end of this table for a breakdown of these welds.)	Visual and volumetric	Cumulative 25% of all weld joints (selectively distributed among the higher stress joints in entire system) every 10 years.	Shutdown cooling	20-in.	17
				RCIC	3-in.,4-in.	33
			Group I and Group II welds (See Note 1 for location breakdown) on main feedlines and main steamlines shall be inspected in 10 years during the first period. At least 25% of the welds shall be inspected at approximately each 2-1/2-year interval. Group I welds shall be inspected during each 10-year period thereafter.	Reactor water cleanup	4-in.,6-in.	27
				CRD hydraulic system	3-in.,4-in.	18
				RHR	16-in.	29
				Head spray	4-in.	28
				Core spray piping	10-in.	32
				HPCI	10-in., 14-in.	24
				Feed piping	4-in.,12-in. 18-in.	96
				Recirculation	4-in.,12-in.	
				Main Steam	22-in., 22-in., 28-in.	135
					3-in.,20-in.	120
K-1	Integrally-welded external support attachments for piping, valves, and pumps	Visual and volumetric	100% cumulative in first 10 years 25% cumulative in each following 10-year inspection interval	Welds to the pressure-containing boundary, the base metal beneath the weld zone, and along the support attachment member for a distance of two base metal thicknesses.		
K-2	Support members and structures for piping, valves, and pumps whose structural integrity is relied upon to withstand design loads and seismic-induced displacements.	Visual	100% cumulative during each 10-year inspection interval	Support settings of constant and variable spring type hangers, snubbers, and shock absorbers shall be inspected to verify proper distribution of design loads among the associated support components.		
L-1	Pump casing welds	Visual and volumetric	One pump of each type during 10-year interval	Not applicable with present plant design.		

TSUP 4.0.E

TABLE 4.6-1 (Cont'd)

Category	Component Parts to be Examined	Examination Method	Frequency of Examination	Examinations[1]
L-2	Pump casings	Visual	One pump of each type during 10-year interval if disassembled	One recirculating pump in 10 years.
M-1	Welds in valve bodies 3 inches and above	Visual and volumetric	One valve of each type during 10-year interval	Not applicable with present plant design
M-2	Valve bodies 3 inches and above	Visual	One valve of each type during 10-year interval if disassembled	One disassembled valve (with or without welds and 3 inches over in normal size) in each category and type shall be subject to visual examination. Individual examination shall cover 100% of the pressure boundary welds and may be performed at or near the end of the 10-year interval.
N	Interior surfaces and internals and integrally welded internal supports of the reactor vessel, including core spray spargers, core spray nozzles, and upper portions of jet pumps	Visual (not Inservice Inspection Code)	During first refueling outage and during subsequent refueling ages at approximately 3-year intervals	Interior surfaces and internal components of the reactor vessel, including the space at the bottom head and internal attachments which are welded to the vessel made accessible by the removal of components during normal refueling operations. All internal attachments whose failure may adversely affect core integrity shall be examined.
O	Control rod drive housing pressure-retaining welds.	Volumetric	The examinations performed during each inspection interval shall include the welds in 10% of the peripheral control rod drive housings.	The areas shall include the weld metal and base metal for one well thickness beyond the edge of the weld.

Notes

1. **Extent of Examinations**

Examinations which reveal unacceptable structural defects in a category shall be extended to include an additional number (or areas) of system components or piping in the same category approximately equal to those initially examined. In the event further unacceptable structural defects are revealed, all remaining system components or piping in the category shall be examined to the extent specified in that examination category.

TS up 4.0.E

TABLE 4.6-1 (Cont'd)

2. Category J Weld Breakdown

Main Steamline - Group I Welds

Line	Weld Identification Unit 2
3001A-20-in.	30A-S10
3001B-20-in.	30B-S10
3001C-20-in.	30C-S10
3001D-20-in.	30D-S10

Group II Welds

Line	Weld Identification Unit 2
3001A-20-in.	30A-S20
	30A-F21
	30A-F24
3001B-20-in.	30B-S24
	30B-F25
	30B-F28
3001C-20-in.	30C-S21A
	30C-F22
	30C-F25
3001D-20-in.	30D-S21
	30D-F22
	30D-F25

Feedwater Line Group I Welds

Line	Weld Identification Unit 2
3204A-18-in.	32A-S4
3204B-18-in.	32B-S5

Group II Welds

Line	Weld Identification Unit 2
3204A-18-in.	32A-S1
	32A-F6
	32A-S1
3204B-18-in.	32B-F4
	32B-F7
3204C-12-in.	32C-S2
3204D-12-in.	32D-S2
	32D-S6
3204E-12-in.	32E-F7
	32D-S2
3204F-12-in.	32F-S2
	32F-F6

3. Supplemental Inspection Program for First and Second Refueling Outages

a. The following critical and sensitized components shall be nondestructively examined by the methods indicated:

Component	Examination Method
Bimetallic welds of field-replaced safe-ends	PT and (UT or RT)

b. The areas subject to examination shall include 100% of the exterior surfaces of the welds in Item 1. Weld areas to be examined shall include the base material for at least one wall thickness beyond the edge of the weld.

c. All examinations shall be conducted in accord with the examination techniques and procedures and meet the acceptance standards specified in the ASME Section XI Inservice Inspection Code and supplemented where necessary by special techniques with demonstrated capability to detect stress-corrosion cracking.

d. The examination frequency shall conform to the following schedule:

Bimetallic welds of field-replaced safe-ends

1) 25% at or within the first refueling outage 2) 25% at or within the second refueling outage

e. In the event any of the examinations for Item 4 reveal indications of structural defects which upon evaluation require repairs or replacements, the specified examination frequency shall be subject to review by the NRC.

TSUP 4.0.E

TABLE 4.6-2

REVISED WITHDRAWAL SCHEDULE FOR QUAD-CITIES UNIT 2

Withdrawal Year	Part No.	Location	Comments
1981	18	Wall - 215°	
2002	17	Wall - 95°	
	19	Wall - 245°	Standby
	15	Wall - 65°	Standby
	20	Wall - 275°	Standby
1979	14	Near Core Top Guide - 90°	
1981	16	Near Core Top Guide ≃ 180°	

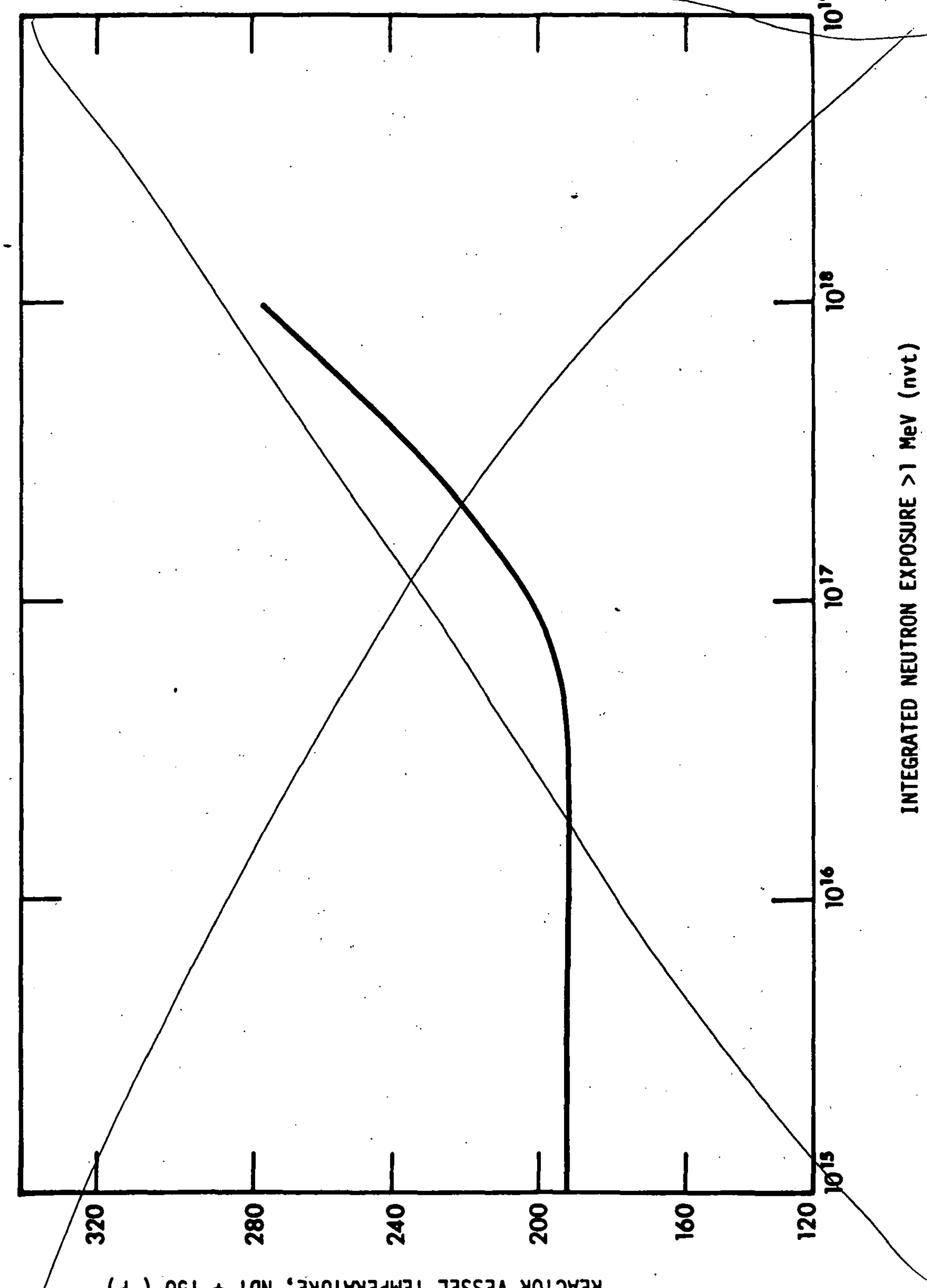

FIGURE 3.6-1

MINIMUM REACTOR
PRESSURIZATION TEMPERATURE

FOR INFORMATION ONLY

QUAD-CITIES
DPR-30

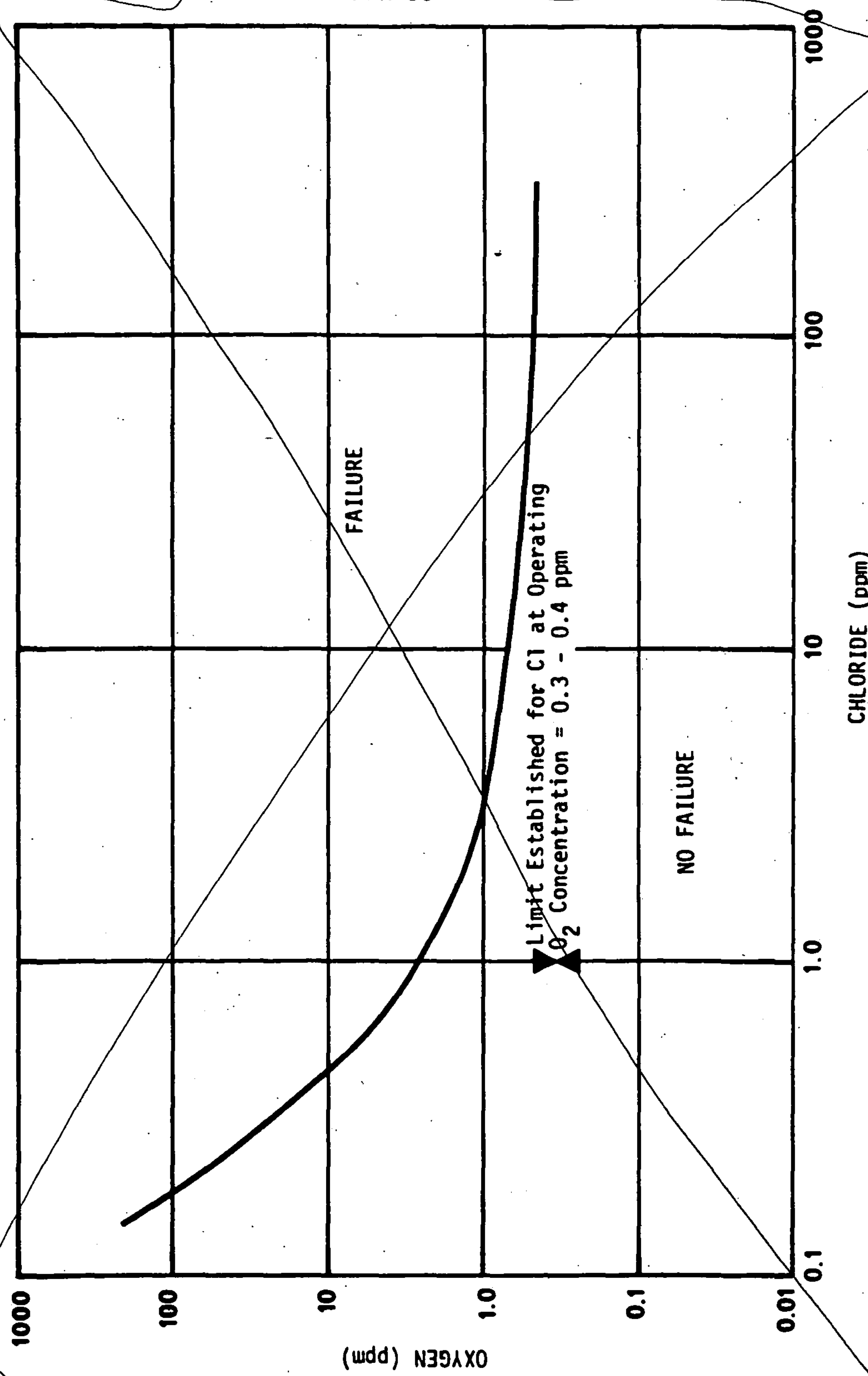

FIGURE 4.6-1

CHLORIDE STRESS CORROSION TEST RESULTS AT 500 °F

ATTACHMENT E

Marked-Up BWR/4 STS Pages

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6.A

3/4.~~4.1~~ RECIRCULATION SYSTEM

RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

6.A

3.~~4.1.1~~ Two reactor coolant system recirculation loops shall be in operation.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1* and 2*.

ACTION:

1. ~~a.~~ With only one reactor coolant system recirculation loop ~~not~~ in operation, ~~immediately initiate measures to place the unit in at least HOT SHUTDOWN within the next 12 hours.~~

within 24 hours either restore both loops to operation or:

a. Increase the MINIMUM CRITICAL POWER RATIO (MCPR) Safety Limit by 0.01 per Specification 2.1.B, and

b. Increase the MINIMUM CRITICAL POWER RATIO (MCPR) Operating Limit by 0.01 per Specification 3.11.c, and

c. Reduce the Average Power Range Monitor (APRM) Flow Biased Neutron Flux Scram and Rod Block and Rod Block Monitor Trip Setpoints to those applicable to single loop operation per Specifications 2.2.A and 3.2.E.

d. Reduce the AVERAGE LINEAR HEAT GENERATION RATE (APLHGR) to single loop operation limits as specified in the CORE OPERATING LIMITS REPORT.

e. Electrically prohibit the idle recirc pump from starting(a)

2. ~~b.~~ With no reactor coolant system recirculation loops in operation, immediately initiate measures to place the unit in at least STARTUP within ~~6~~ 8 hours and in HOT SHUTDOWN within the next 6 hours.

~~(c. With a pump discharge bypass valve inoperable, verify the valve to be closed at least once per 31 days.)~~

SURVEILLANCE REQUIREMENTS

~~4.4.1.1.1 Each pump discharge valve (and bypass valve) shall be demonstrated OPERABLE by cycling each valve through at least one complete cycle of full travel during each startup** prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER.~~

6.A

4.~~4.1.1.2~~ Each pump MG set scoop tube mechanical and electrical stop shall be demonstrated OPERABLE with the overspeed setpoints ~~less than or equal to (112)% and (120)%, respectively, of rated core flow,~~ specified in the CORE OPERATING LIMITS REPORT at least once per 18 months.

~~*See Special Test Exception 3.10.4.~~
~~**If not performed within the previous 31 days.~~

(a) Except to permit testing in preparation for returning the pump to service.

INSERT FOR PAGE 3/4 4-1

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3.4.1.1 Two reactor coolant system recirculation loops shall be in operation with:

a. Total core flow greater than or equal to 45% of rated core flow, or

b. THERMAL POWER less than or equal to the limit specified in Figure 3.4.1.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*.

ACTION:

a. With one reactor coolant system recirculation loop not in operation, immediately initiate action to reduce THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1-1 within 2 hours and initiate measures to place the unit in at least HOT SHUTDOWN within 12 hours.

b. With no reactor coolant system recirculation loops in operation, immediately initiate action to reduce THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1-1 within 2 hours and initiate measures to place the unit in at least STARTUP within 6 hours and in HOT SHUTDOWN within the next 6 hours.

c. With two reactor coolant system recirculation loops in operation and total core flow less than 45% of rated core flow and THERMAL POWER greater than the limit specified in Figure 3.4.1.1-1:

   1. Determine the APRM and LPRM** noise levels (Surveillance 4.4.1.1.3):

      a) At least once per 8 hours, and

      b) Within 30 minutes after the completion of a THERMAL POWER increase of at least 5% of RATED THERMAL POWER.

   2. With the APRM or LPRM** neutron flux noise levels greater than three times their established baseline noise levels, immediately initiate corrective action to restore the noise levels to within the required limits within 2 hours by increasing core flow to greater than 45% of rated core flow or by reducing THERMAL POWER to less than or equal to the limit specified in Figure 3.4.1.1-1.

*See Special Test Exception 3.10.4.

**Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

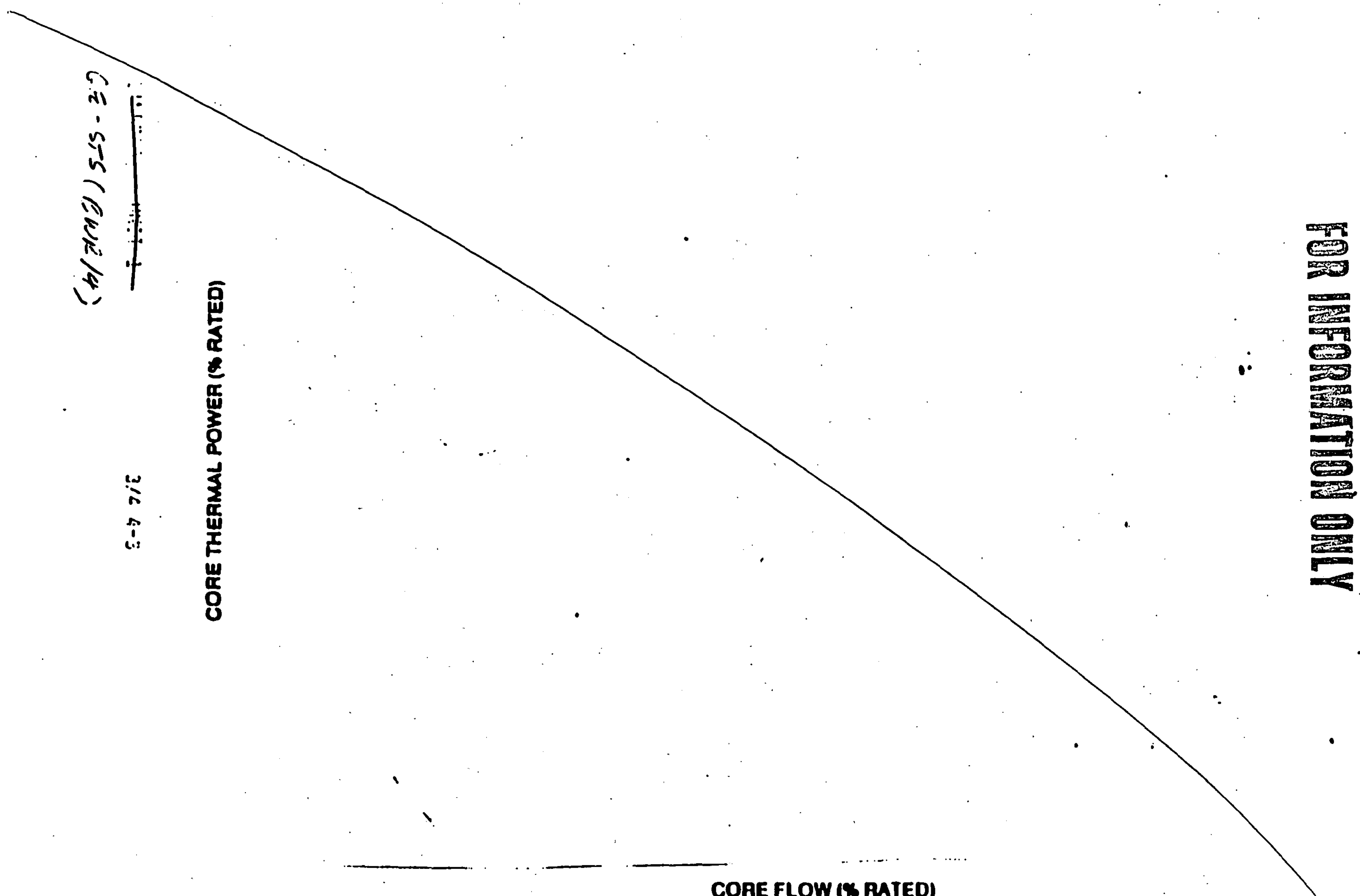
4.4.1.1.1 Each pump discharge valve shall be demonstrated OPERABLE by cycling each valve through at least one complete cycle of full travel during each startup* prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER.

4.4.1.1.2 Each pump MG set scoop tube mechanical and electrical stop shall be demonstrated OPERABLE with overspeed setpoints less than or equal to 105% and 102.5%, respectively, of rated core flow, at least once per 18 months.

4.4.1.1.3 Establish a baseline APRM and LPRM** neutron flux noise value within the regions for which monitoring is required (Specification 3.4.1.1, ACTION c) within 2 hours of entering the region for which monitoring is required unless baselining has previously been performed in the region since the last refueling outage.

*If not performed within the previous 31 days.

**Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.



THERMAL POWER VERSUS CORE FLOW

FIGURE 3.4.1.1-1

FOR INFORMATION ONLY

QUAD CITIES only

REACTOR COOLANT SYSTEM

FOR INFORMATION ONLY

JET PUMPS

LIMITING CONDITION FOR OPERATION

G.B

3.~~4.1.2~~ e All jet pumps shall be OPERABLE and flow indication shall be OPERABLE on at least 18 jet pumps (2).

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1 and 2.

ACTION:

1. With one or more jet pumps inoperable for other than inoperable flow indication, be in at least HOT SHUTDOWN within 12 hours.

1. During two loop operation, [illegible] at least once per 24 hours while greater than 25% of RATED THERMAL POWER by determining recirculation loop flow), total core flow and individual jet pump flow for each jet pump and verifying that no two of the following conditions occur when both recirculation pumps are operating in accordance with Specification 3.6.C:

similar for 4.0. 4.6.B.2

repeated for 4.6.B.2

SURVEILLANCE REQUIREMENTS

6.B.1

4.~~4.1.2~~ e Each of the above required jet pumps shall be demonstrated OPERABLE prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER and at least once per 24 hours by determining recirculation loop flow, total core flow and diffuser-to-lower plenum differential pressure for each jet pump and verifying that no two of the following conditions occur when the recirculation pumps are operating at the same speed.

a. The indicated recirculation ~~loop~~ pump flow differs by more than 10% from the established ~~pump~~ speed-~~loop~~ ~~flow~~ flow characteristics.

b. The indicated total core flow differs by more than 10% from the established total core flow value derived from ~~recirculation loop flow measurements~~ established core plate ΔP/core flow relationships.

c. The indicated ~~diffuser-to-lower plenum differential pressure~~ flow of any individual jet pump differs from the established patterns by more than 10%.

d. The provisions of Specification 4.0.D are not applicable provided that the surveillance is performed within 24 hours after exceeding 25% of RATED THERMAL POWER.

2. With flow indication inoperable for three or more jet pumps, flow indication shall be restored such that at least 18 jet pumps have OPERABLE flow indication within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours.

3. With flow indication inoperable for both jet pumps on the same jet pump riser, flow indication shall be restored to OPERABLE status for at least one of these jet pumps within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours.

4. With flow indication inoperable on both calibrated (double-tap) jet pumps on the same recirculation loop, flow indication shall be restored to OPERABLE status for at least one of these jet pumps within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours.

X

REACTOR COOLANT SYSTEM

FOR INFORMATION ONLY

RECIRCULATION PUMPS

LIMITING CONDITION FOR OPERATION

3.~~4.1.3~~ 6.C Recirculation pump speed shall be maintained within:

1. ~~a.~~ ~~5~~ 10% of each other with ~~core flow~~ THERMAL POWER greater than or equal to ~~70~~ 80% of ~~rated core flow~~ RATED THERMAL POWER.

2. ~~b.~~ ~~10~~ 15% of each other with ~~core flow~~ THERMAL POWER less than ~~70~~ 80% of ~~rated core flow~~ RATED THERMAL POWER.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1~~*~~ and 2~~*~~ during two recirculation loop operation.

ACTION:

With the recirculation pump speeds different by more than the specified limits, either:

1. ~~a.~~ Restore the recirculation pump speeds to within the specified limit within 2 hours, or

2. ~~b.~~ ~~Declare the recirculation loop of the pump with the slower speed not in operation~~ Trip one of the recirculation pumps and take the ACTION required by Specification ~~3.4.1.1~~ 3.6.A.1

SURVEILLANCE REQUIREMENTS

4.~~4.1.3~~ 6.C Recirculation pump speed shall be verified to be within the limits at least once per 24 hours.

~~*See Special Test Exception 3.10.4.~~

REACTOR COOLANT SYSTEM

FOR INFORMATION ONLY

IDLE RECIRCULATION LOOP STARTUP

LIMITING CONDITION FOR OPERATION

6.D

3.4.1.4 An idle recirculation loop shall not be started unless the temperature differential between the reactor pressure vessel steam space coolant and the bottom head drain line coolant is less than or equal to (~~100~~)°F, ~~and~~: 145°F [a]

1. ~~a~~. When both loops have been idle, unless the temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel is less than or equal to (50)°F, or 50

2. ~~b~~. When only one loop has been idle, unless the temperature differential between the reactor coolant within the idle and operating recirculation loops is less than or equal to (50)°F and the operating loop ~~flow rate is less than or equal to (50)% of rated loop flow.~~ speed of the operating pump is ≤43% of rated pump speed.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(s) 1, 2, 3 and 4.

ACTION:

With temperature differences and/or flow rates exceeding the above limits, suspend startup of any idle recirculation loop.

SURVEILLANCE REQUIREMENTS

6.D

4.4.1.4 The temperature differentials and flow rate shall be determined to be within the limits within 15 minutes prior to startup of an idle recirculation loop.

a Below 25 psig reactor pressure, this temperature differential is not applicable.

FOR INFORMATION ONLY

6.E e e

3/4.4.2 SAFETY/RELIEF VALVES

e

SAFETY/RELIEF VALVES

LIMITING CONDITION FOR OPERATION

6.E e e

3.4.2.1 (At least (two) reactor coolant system code safety valves and) the safety valve function of (at least (11) (of the following) reactor coolant system safety/relief valves shall be OPERABLE, with the specified code safety valve function lift settings:* (a) in accordance the 9

established as

(2) safety valves @ (1146) psig ±1% (b)
1 (3) safety-relief valves @ (1175) psig ±1% 1135
2 (3) safety-relief valves @ (1185) psig ±1% 1240
2 (3) safety-relief valves @ (1195) psig ±1% 1250
4 (2) safety-relief valves @ (1205) psig ±1% 1260

e e

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1, 2 and 3.

Each installed safety valve shall be closed with OPERABLE position indication.

ACTION:

e

1. ~~a~~. With (one or more of the above required reactor coolant system code safety valves or with) the safety valve function of one or more of the above required safety/relief valves inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

e

b. With one or more (code safety valves or) safety/relief valves stuck open, provided that suppression pool average water temperature is less than (95)°F, close the stuck open (code safety valves and/or) safety relief valve(s); if unable to close the stuck open valve(s) within 2 minutes or if suppression pool average water temperature is (95)°F or greater, place the reactor mode switch in the Shutdown position.

e

c. With one or more safety/relief valve (tail-pipe pressure switches) (acoustic monitors) inoperable, restore the inoperable (switch(es)) (monitor(s)) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

2. With all position indication inoperable on one or more safety valve(s), restore the inoperable position indication to OPERABLE status within 30 days or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours

e

(a) ~~*~~The lift setting pressure shall correspond to ambient conditions of the valves at nominal operating temperatures and pressures.

(b) Target Rock combination safety/relief valves

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SURVEILLANCE REQUIREMENTS

(4.4.2.1.1 (The code safety valve function of each of the above required safety/relief valves shall be demonstrated OPERABLE by verifying that the bellows on the safety/relief valves have integrity, by instrumentation indication, at least once per 24 hours.)

6.E.1

position indicators

4.4.2.1.2 The (tail-pipe pressure switch) (acoustic monitor) for each safety/relief valve shall be demonstrated OPERABLE with the setpoint verified to be ((20) ± (5) psig) by performance of a:

a. CHANNEL (FUNCTIONAL TEST) (CHECK) at least once per 31 days, and a

b. CHANNEL CALIBRATION at least once per 18 months(*).

(*The provisions of Specification 4.0.4 are not applicable provided the Surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test.)

6.E.2

once per 18 months,

4.4.2.2 At least 1/2 of the safety relief valves shall be removed, set pressure tested and reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with manufacturer's recommendations, ~~at least once per 18 months~~, ~~and they~~ shall be rotated such that all (14) 9 safety ~~relief~~ valves are removed, set pressure tested and reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with manufacturer's recommendations tested at least once per 40 months.

At least once per 40 months, the safety valves

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SAFETY/RELIEF VALVES/LOW-LOW SET FUNCTION

5 reactor coolant system relief valves and the reactuation time delay of two

LIMITING CONDITION FOR OPERATION

6.F

3.4.2.2 ~~The relief valve function and the low-low set function of the following reactor~~ coolant system ~~safety/~~relief valves shall be OPERABLE with the following settings:

Each installed relief valve shall be closed with OPERABLE position indication.

Valve No.	Low-Low Set Function Setpoint* (psig) ± 1% Open	Close	Relief Function Setpoint(a) (psig) ± 1% Open	Close
____	(1033)	(926)	≤ 1115 psig	____
____	(1073)	(936)	≤ 1115 psig	____
____	(1113)	(946)	≤ 1135 psig	____
____	(1113)	(946)	≤ 1135 psig	____
____	(1113)	(946)	≤ 1135 psig (a)	____

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1, 2 and 3.

ACTION:

1. With one or more relief valves open, provided that suppression pool average water temperature is [illegible] take action to close the open valve(s); if suppression pool average water temperature is ≥ 110°F place the reactor mode switch in the Shutdown position.

2. ~~a.~~ With the relief valve function and/or the ~~low-low set function~~ reactuation time delay of one of the above required reactor coolant system ~~safety/~~relief valves inoperable, restore the inoperable relief valve function and low-low set function to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3. ~~b.~~ With the relief valve function and/or the ~~low-low set function~~ reactuation time delay of more than one of the above required reactor coolant system ~~safety/~~relief valves inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

4. With all position indication inoperable for one or more relief valve(s), restore the inoperable position indication to OPERABLE [illegible] within 30 days or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

6.P

4.4.2.2.1 The relief valve function and the ~~low-low set function pressure actuation~~ reactuation time delay function instrumentation shall be demonstrated OPERABLE by performance of a:

a. CHANNEL FUNCTIONAL TEST ~~, including calibration of the trip unit,~~ of the relief valve function at least once per ~~31~~ 92 days.

b. CHANNEL CALIBRATION, LOGIC SYSTEM FUNCTIONAL TEST and simulated automatic operation of the entire system at least once per 18 months.

(a) Target Rock combination safety/relief valve.

~~*The lift setting pressure shall correspond to ambient conditions of the valves at nominal operating temperatures and pressures.~~

2. A position indicator for each relief valve shall be demonstrated OPERABLE by performance of a:

a. CHANNEL CHECK at least once per 31 days, and a

b. CHANNEL CALIBRATION at least once per 18 months.

FOR INFORMATION ONLY

6.5 e

~~3/4.4.3~~ REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

1. With the primary containment atmosphere [illegible] radioactivity [illegible] system inoperable, restore the inoperable leak detection radioactivity sampling system to OPERABLE status within [illegible] hours; otherwise be in HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
2. With the drywell floor drain sump system inoperable, restore the drywell floor drain system to OPERABLE status within 24 hours; otherwise be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3.4.3.1 The following reactor coolant system leakage detection systems shall be OPERABLE:

1. ~~a.~~ The primary containment atmosphere (gaseous or particulate) radioactivity monitoring system, e

2. ~~b.~~ The ~~primary containment~~ drywell floor drain sump flow monitoring sampling system, and e

c. Either the (primary containment air coolers condensate flow rate monitoring system) or the primary containment atmosphere (gaseous or particulate) radioactivity monitoring system.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(s) 1, 2 and 3.

ACTION:

With only two of the above required leakage detection systems OPERABLE, operation may continue for up to 30 days provided grab samples of the containment atmosphere are obtained and analyzed at least once per 24 hours when the required gaseous and/or particulate radioactive monitoring system is inoperable; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. e

SURVEILLANCE REQUIREMENTS

6.5 e

~~4.4.3.1~~ The reactor coolant system leakage detection systems shall be demonstrated OPERABLE by:

1. ~~a.~~ Primary containment atmosphere particulate and gaseous monitoring systems-performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months. e

b. Primary containment sump flow monitoring system-performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION TEST at least once per 18 months.

c. Primary containment air coolers condensate flow rate monitoring system-performance of a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

1. Performing the leakage determination of Specification 4.6.H.
2. Performing a CHANNEL CALIBRATION of the drywell floor drain sump pump discharge flow integrator at least once per 18 months.

 FOR INFORMATION ONLY

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

6.H 3.~~4.3.2~~ Reactor coolant system leakage shall be limited to:

1. ~~a~~. No PRESSURE BOUNDARY LEAKAGE.

3. ~~b~~. 5 gpm UNIDENTIFIED LEAKAGE..

2. ~~c~~. ≤25 gpm total leakage averaged over any 24-hour surveillance period.

d. 1 gpm leakage at a reactor coolant system pressure of (950) ±(10) psig from any reactor coolant system pressure isolation valve specified ~~in Table 3.4.3.2-1.~~

4. (e). ≤2 gpm increase in UNIDENTIFIED LEAKAGE within any ~~4-hour~~ period of 24 hours or less (Applicable in OPERATIONAL MODE(s) 1 only)

APPLICABILITY: OPERATIONAL MODE(S) ~~CONDITIONS~~ 1, 2 and 3.

ACTION:

1. ~~a~~. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

2. ~~b~~. With the ~~any~~ reactor coolant system UNIDENTIFIED LEAKAGE or total leakage rate(s) ~~leakage~~ greater than the above limits ~~in b and/or c, above~~, reduce the leakage rate to within the limits within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. With any reactor coolant system pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least two other closed (manual or deactivated automatic) (or check*) valves, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

d. With one or more of the high/low pressure interface valve leakage pressure monitors shown in Table 3.4.3.2-1 inoperable, restore the inoperable monitor(s) to OPERABLE status within 7 days or verify the pressure to be less than the alarm setpoint at least once per 12 hours; restore the inoperable monitor(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3. (e). With any increase in reactor coolant system UNIDENTIFIED LEAKAGE ~~reactor coolant system UNIDENTIFIED LEAKAGE increase~~ greater than 2 gpm within any period of 24 hours or less in OPERATIONAL MODE 1: ~~4-hour period~~, identify the source of leakage increase as not IGSCC susceptible material ~~service sensitive Type 304 or 316 austenitic stainless steel~~ within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.)

(*Which have been verified not to exceed the allowable leakage limit at the last refueling outage or the after last time the valve was disturbed, whichever is more recent.)

SURVEILLANCE REQUIREMENTS

6.H

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits by:

1. ~~a.~~ Sampling ~~Monitoring~~ the primary containment atmospheric (particulate) (and) (gaseous) radioactivity at least once per (4) (12) hours,(a)

2. ~~b.~~ Determining ~~Monitoring~~ the primary containment sump flow rate at least once per (4) (12) hours, (and) 8 hours, not to exceed 12 hours.

c. Monitoring the primary containment air coolers condensate flow rate or the (gaseous) (particulate) radioactivity at least once per (4) (12) hours, and

d. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours.

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

a. At least once per 18 months, and

b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

4.4.3.2.3 The high/low pressure interface valve leakage pressure monitors shall be demonstrated OPERABLE with alarm setpoints per Table 3.4.3.2-2 by performance of a:

a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and

b. CHANNEL CALIBRATION at least once per 18 months.

(a) Not a means of quantifying leakage

TABLE 3.4.3.2-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

VALVE NUMBER	SYSTEM

TABLE 3.4.3.2-2

REACTOR COOLANT SYSTEM INTERFACE VALVES

LEAKAGE PRESSURE MONITORS

VALVE NUMBER	SYSTEM	ALARM SETPOINT (psig)

FOR INFORMATION ONLY

6.I

3/4.~~4.4~~ CHEMISTRY

LIMITING CONDITION FOR OPERATION

6.I

3.~~4.4~~ The chemistry of the reactor coolant system shall be maintained within the limits specified in Table ~~3.4.4-1~~. 3.6.I-1

APPLICABILITY: ~~At all times~~. 1, 2(2), and 3(2)

ACTION:

1. ~~a~~. In OPERATIONAL ~~CONDITION~~ MODE 1:
   - a. ~~1~~. With the conductivity, chloride concentration or pH exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1 for less than or equal to 72 hours during one continuous time interval and, for conductivity and chloride concentration, for less than or equal to 336 hours per year, ~~but~~ and with the conductivity less than or equal to 10 μmho/cm at 25°C and with the chloride concentration less than or equal to 0.5 ppm, this need not be reported to the Commission ~~and the provisions of Specification 3.0.4 are not applicable~~.
   - b. ~~2~~. With the conductivity, chloride concentration or pH exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1 for more than 72 hours during one continuous time interval or with the conductivity and chloride concentration exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1 for more than 336 hours per year, be in at least STARTUP within the next ~~6~~ 8 hours.
   - c. ~~3~~. With the conductivity exceeding 10 μmho/cm at 25°C or chloride concentration exceeding 0.5 ppm, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
2. ~~b~~. In OPERATIONAL ~~CONDITION~~ MODE(S) 2 and 3 with the conductivity, chloride concentration or pH exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1 for more than 48 hours during one continuous time interval, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
3. ~~c~~. At all other times:
   - a. ~~1~~. With the:
     1. ~~a)~~ Conductivity or pH exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1, restore the conductivity and pH to within the limit within 72 hours, or
     2. ~~b)~~ Chloride concentration exceeding the limit specified in Table ~~3.4.4-1~~ 3.6.I-1, restore the chloride concentration to within the limit within 24 hours, or

     perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the reactor coolant system. Determine that the structural integrity of the reactor coolant system remains acceptable for continued operation prior to proceeding to OPERATIONAL ~~CONDITION~~ MODE 3.
   - b. ~~2~~. The provisions of Specification 3.0.~~3~~ c are not applicable.

(2) The provisions of Specification 3.0.D are not applicable during unit shutdown when entering OPERATIONAL MODE(S) 2 and 3 from OPERATIONAL MODE 1

FOR INFORMATION ONLY

SURVEILLANCE REQUIREMENTS

6.I 4.~~4.4~~ The reactor coolant shall be determined to be within the specified chemistry limit by:

1. ~~a.~~ Measurement prior to pressurizing the reactor during each startup, if not performed within the previous 72 hours.

2. ~~b.~~ Analyzing a sample of the reactor coolant for:

   a. ~~1.~~ Chlorides at least once per:

      1. a) 72 hours, and

      2. b) 8 hours whenever conductivity is greater than the limit in Table ~~3.4.4-1~~ 3.6.I-1.

   b. ~~2.~~ Conductivity at least once per 72 hours.

   c. ~~3.~~ pH at least once per:

      a) ~~72 hours, and~~

      b) 8 hours whenever conductivity is greater than the limit in Table ~~3.4.4-1~~ 3.6.I-1.

3. ~~c.~~ Continuously recording the conductivity of the reactor coolant, or, when the continuous recording conductivity monitor is inoperable ~~for up to 31 days,~~ obtaining an in-line conductivity measurement at least once per:

   a ~~1.~~ 4 hours in OPERATIONAL ~~CONDITIONS~~ MODE(s) 1, 2 and 3, and

   b ~~2.~~ 24 hours at all other times.

4. ~~d.~~ Performance of a CHANNEL CHECK of the continuous conductivity monitor with an in-line flow cell at least once per:

   a. ~~1.~~ 7 days, and

   b. ~~2.~~ 24 hours whenever conductivity is greater than the limit in in Table ~~3.4.4-1~~ 3.6.I-1.

6.I-1

TABLE ~~3.~~4.4-1

REACTOR COOLANT SYSTEM CHEMISTRY LIMITS

OPERATIONAL ~~CONDITION~~ MODE(S)	CHLORIDES	CONDUCTIVITY (µmhos/cm @25°C)	PH
1	≤ 0.2 ppm	≤ 1.0	5.6 ≤ pH ≤ 8.6
2 and 3	≤ 0.1 ppm	≤ 2.0	5.6 ≤ pH ≤ 8.6
At all other times	≤ 0.5 ppm	≤ 10.0	5.3 ≤ pH ≤ 8.6

FOR INFORMATION ONLY

REACTOR COOLANT SYSTEM

3/4 4.5 SPECIFIC ACTIVITY

6.J

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the ~~primary~~ reactor coolant shall be limited to:

a. Less than or equal to 0.2 microcuries per gram DOSE EQUIVALENT I-131, and

b. Less than or equal to 100/Ē microcuries per gram.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1, 2, 3 and 4.

ACTION:

1. ~~a~~. In OPERATIONAL ~~CONDITIONS~~ MODE(S) 1, 2 or 3 with the specific activity of the ~~primary~~ reactor coolant:

1. Greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 but less than or equal to 4.0 microcuries per gram, operation may continue for up to 48 hours provided that the cumulative operating time under these circumstances does not exceed 800 hours in any consecutive 12-month period. With the total cumulative operating time at a primary coolant specific activity greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 exceeding 500 hours in any consecutive six-month period, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days indicating the number of hours of operation above this limit. The provisions of Specification 3.0.4 are not applicable.

2. Greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or for more than 800 hours cumulative operating time in a consecutive 12-month period, or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours.

3. Greater than 100/Ē microcuries per gram, be in at least HOT SHUTDOWN with the main steamline isolation valves closed within 12 hours.

Special Report

b. In OPERATIONAL CONDITIONS 1, 2, 3 or 4, with the specific activity of the ~~primary~~ reactor coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 ~~or greater than 100/Ē microcuries per gram~~, perform the sampling and analysis ~~requirements of~~ Item 4a of Table 4.4.5-1 6.J-1 until the specific activity ~~of the primary~~ coolant is restored to within its limit. ~~A REPORTABLE OCCURRENCE~~ shall be prepared and submitted to the Commission pursuant to Specification 6.9.1. This report shall contain the results of the specific activity analyses and the time duration when the specific activity of the coolant exceeded 0.2 microcuries per gram DOSE EQUIVALENT I-131 together with the following additional information.

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LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

3 ~~c~~. In OPERATIONAL ~~CONDITION~~ MODE(S) 1 or 2, with:

a ~~1~~. THERMAL POWER changed by more than 15% 20 of RATED THERMAL POWER in one hour*, or

b ~~2~~. The off-gas level, ~~at the SJAE~~ prior to the holdup line, increased by more than 10,000 25,000 microcuries per second in one hour during steady state operation at release rates less than 75,000 100,000 microcuries per second, or

3. The off-gas level, ~~at the SJAE~~ prior to the holdup line, increased by more than 15% 150% in one hour during steady state operation at release rates greater than 75,000 100,000 microcuries per second,

perform the sampling and analysis requirements of Item 4b 3b of Table 4.4.5-1 4.6.J-1 until the specific activity of the ~~primary~~ reactor coolant is restored to within its limit. Prepare and submit to the Commission a Special Report pursuant to Specification 6.9.2 at least once per 92 days containing the results of the specific activity analysis together with the below additional information for each occurrence.

Additional Information

1. Reactor power history starting 48 hours prior to:
   a) The first sample in which the limit was exceeded, and/or
   b) The THERMAL POWER or off-gas level change.
2. Fuel burnup by core region.
3. Clean-up flow history starting 48 hours prior to:
   a) The first sample in which the limit was exceeded, and/or
   b) The THERMAL POWER or off-gas level change.
4. Off-gas level starting 48 hours prior to:
   a) The first sample in which the limit was exceeded, and/or
   b) The THERMAL POWER or off-gas level change.

SURVEILLANCE REQUIREMENTS

4.4.5 6.J The specific activity of the reactor coolant shall be demonstrated to be within the limits by performance of the sampling and analysis program of Table 4.4.5-1 4.6.J-1.

*Not applicable during the startup test program.

TABLE 4.4.5-1

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	OPERATIONAL ~~CONDITIONS~~ MODE(s) IN WHICH SAMPLE AND ANALYSIS REQUIRED
1. Gross Beta and Gamma Activity Determination	At least once per 72 hours	1, 2, 3
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	At least once per 31 days	1
3. Radiochemical for Ē Determination	At least once per 6 months*	1
3. ~~4~~. Isotopic Analysis for Iodine	a) At least once per 4 hours, whenever the specific activity exceeds a limit, as required by ACTION ~~b~~ 2.	1~~#~~, 2~~#~~, 3~~#~~, 4~~#~~ (a)
	b) At least one sample, between 2 and 6 hours following the change in THERMAL POWER or off-gas level, as required by ACTION c 3	1, 2
4. ~~5~~. Isotopic Analysis of an Off-gas Sample Including Quantitative Measurements for at least Xe-133, Xe-135 and Kr-88	At least once per 31 days	1

*Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was ~~last subcritical for 48 hours or longer.~~

(a) ~~#~~Until the specific activity of the ~~primary~~ reactor coolant system is restored to within its limits.

FOR INFORMATION ONLY

6.K

3/~~4.4.6~~ PRESSURE/TEMPERATURE LIMITS

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

6.K 6.K-1

3.~~4.6.1~~ The reactor coolant system temperature and pressure shall be limited in accordance with the limit lines shown on Figure 3.~~4.6.1-1~~ (1) curves A ~~and A'~~ for hydrostatic or leak testing; (2) curves B ~~and B'~~ for heatup by non-nuclear means, cooldown following a nuclear shutdown and low power PHYSICS TESTS; and (3) curves C ~~and C'~~ for operations with a critical core other than low power PHYSICS TESTS, with:

1. ~~a.~~ A maximum reactor coolant heatup of (100)°F in any one hour period,
2. ~~b.~~ A maximum reactor coolant cooldown of (100)°F in any one hour period,
3. ~~c.~~ A maximum reactor coolant temperature change of less than or equal to 20°F in any one hour period during inservice hydrostatic and leak testing operations above the heatup and cooldown limit curves, and
4. ~~d.~~ The reactor vessel flange and head flange temperature greater than or equal to 100 ~~(70)~~°F when reactor vessel head bolting studs are under tension.

APPLICABILITY: At all times.

ACTION:

With any of the above limits exceeded, restore the temperature and/or pressure to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the reactor coolant system; determine that the reactor coolant system remains acceptable for continued operations or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

6.K.1

4.~~4.6.1.1~~ During system heatup, cooldown and inservice leak and hydrostatic testing operations, the reactor coolant system temperature and pressure shall be determined to be within the above required heatup and cooldown limits and to the right of the limit lines of Figure 3.~~4.6.1-1~~ 6.K-1 curves A or B ~~and A', B and B', or C and C'~~ as applicable, at least once per 30 minutes.

(b. The reactor coolant system temperature at the following location shall be determined at least once per 5 minutes until 3 successive temperatures at each location are within 5°F:

1. Reactor vessel bottom drain,
2. Recirculation loops A and B, and
3. Reactor vessel bottom head.)

6.K.2

4.4.6.1.2 The reactor coolant system temperature and pressure shall be determined to be to the right of the criticality limit line of Figure 3.4.6.1-1 (6.K-1) curves C and C' within 15 minutes prior to the withdrawal of control rods to bring the reactor to criticality and at least once per 30 minutes during system heatup.

6.K.3

4.4.6.1.3 The reactor vessel material surveillance specimens shall be removed and examined, to determine changes in reactor pressure vessel material properties, as required by 10 CFR 50, Appendix H in accordance with the schedule in Table 4.4.6.1.3-1. The results of these examinations shall be used to update the curves of Figure 3.4.6.1-1.

6.K.4

4.4.6.1.4 The reactor vessel flange and head flange temperature shall be verified to be greater than or equal to 70°F: 100

a. In OPERATIONAL ~~CONDITION~~ MODE 4 when reactor coolant system temperature is:

   1. $\leq$ 100°F (130), at least once per 12 hours.

   2. $\leq$ 80°F (110), at least once per 30 minutes.

b. Within 30 minutes prior to and at least once per 30 minutes during tensioning of the reactor vessel head bolting studs.

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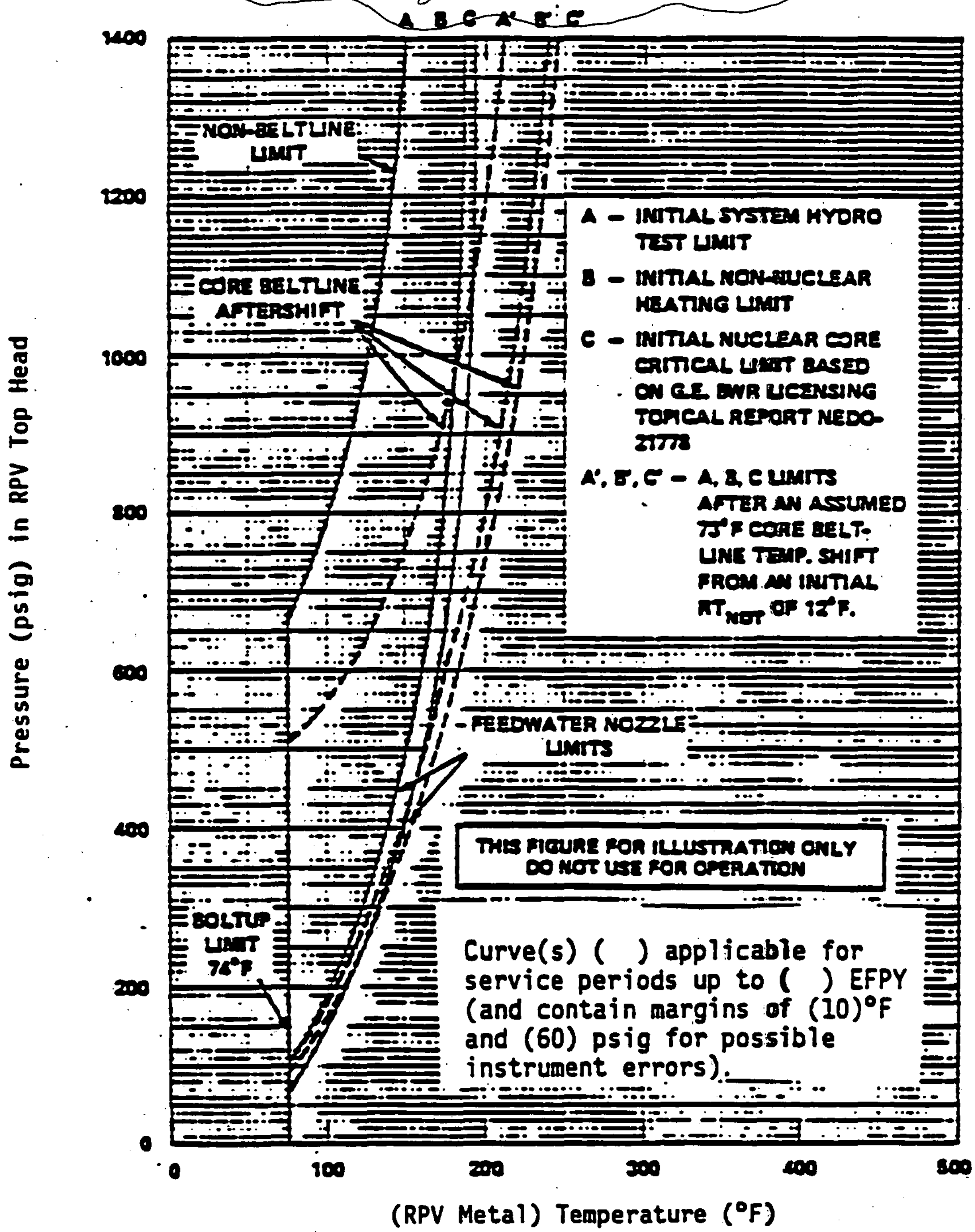
Dresden/Quad C - specific figures incorporated



MINIMUM (REACTOR PRESSURE VESSEL METAL) TEMPERATURE VS. REACTOR VESSEL PRESSURE

Figure 3.4.6.1-1

TABLE 4.4.6.1.3-1

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM-WITHDRAWAL SCHEDULE

CAPSULE NUMBER	VESSEL LOCATION	LEAD FACTOR	WITHDRAWAL TIME (EFPY)

REACTOR COOLANT SYSTEM **FOR INFORMATION ONLY**

REACTOR STEAM DOME

LIMITING CONDITION FOR OPERATION

6.L

3.4.6.2 e The pressure in the reactor steam dome shall be less than (1045) psig. e

or equal to 1005

APPLICABILITY: OPERATIONAL CONDITION 1* (a) and 2*. e

ACTION:

1005

With the reactor steam dome pressure exceeding (1045) e psig, reduce the pressure to less than (1045) psig within 15 minutes or be in at least HOT SHUTDOWN within 12 hours.

or equal to 1005

SURVEILLANCE REQUIREMENTS

6.L

4.4.6.2 e The reactor steam dome pressure shall be verified to be less than (1045) psig at least once per 12 hours.

or equal to 1005

(a) * e Not applicable during anticipated transients.

6.M

3/4.4.7 MAIN STEAM LINE ISOLATION VALVES

e

LIMITING CONDITION FOR OPERATION

3.4.7 Two main steam line isolation valves (MSIVs) per main steam line shall be OPERABLE with closing times greater than or equal to (3) and less than or equal to (5) seconds.

e

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(S) 1, 2 and 3.

ACTION:

a. With one or more MSIVs inoperable: e

1. Maintain at least one MSIV OPERABLE in each affected main steam line that is open and within 8 hours, either: e

   1. a) Restore the inoperable valve(s) to OPERABLE status, or e

   2. b) Isolate the affected main steam line by use of a deactivated MSIV in the closed position. e

2. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. e

b. The provisions of Specification 3.0.4 are not applicable. e

SURVEILLANCE REQUIREMENTS

6.M

4.4.7 Each of the above required MSIVs shall be demonstrated OPERABLE by verifying full closure between (3) and (5) seconds when tested pursuant to Specification 4.0.5.

e

E

REACTOR COOLANT SYSTEM

6.N e

3/4.4.8 STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

6.N e

3.4.8 The structural integrity of ASME Code Class 1, 2 and 3 components shall be maintained in accordance with Specification 4.4.8. e 6.N

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ MODE(s) 1, 2, 3, 4 and 5.

ACTION:

1. ~~a.~~ With the structural integrity of any ASME Code Class 1 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature more than 50°F above the minimum temperature required by NDT considerations.

2. ~~b.~~ With the structural integrity of any ASME Code Class 2 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature above 200°F. e

3. ~~c.~~ With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) from service.

4. ~~d.~~ The provisions of Specification 3.0.4 are not applicable. e

SURVEILLANCE REQUIREMENTS

6.N e

4.4.8 No requirements other than Specification 4.0.5. e E

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6.0

REACTOR COOLANT SYSTEM

3/4.4.9 ~~RESIDUAL HEAT REMOVAL~~ Shutdown Cooling

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

6.0 3.4.9.1 Two# (a) shutdown cooling (SDC) mode loops ~~of the residual heat removal (RHR) system~~ shall be OPERABLE and, unless at least one recirculation pump is in operation, at least one shutdown cooling mode loop shall be in operation* (b), ## (c), with each loop consisting of at least:

1. ~~a.~~ One OPERABLE SDC RHR pump, and
2. ~~b.~~ One OPERABLE SDC RHR heat exchanger.

APPLICABILITY: OPERATIONAL MODE ~~CONDITION~~ 3, with reactor vessel coolant temperature pressure less than the SDC ~~RHR~~ cut-in permissive setpoint.

ACTION:

1. ~~a.~~ With less than the above required (SDC) RHR shutdown cooling mode loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible. Within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable SDC RHR shutdown cooling mode loop. Be in at least COLD SHUTDOWN within 24 hours.** (d)
2. ~~b.~~ With no RHR shutdown cooling mode loop in operation, immediately initiate corrective action to return at least one ~~loop~~ shutdown cooling loop or recirculation pump to operation as soon as possible. Within one hour establish reactor RHR shutdown cooling mode loop or recirculation pump coolant circulation by an alternate method and monitor reactor coolant temperature and pressure at least once per hour.

SURVEILLANCE REQUIREMENTS

6.0 4.4.9.1 At least one SDC ~~shutdown cooling mode~~ loop ~~of the residual heat removal system~~ or one recirculation pump or alternate method shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

(a) ~~#~~ One RHR shutdown cooling mode loop may be inoperable for up to 2 hours for surveillance testing provided the other loop is OPERABLE and in operation.

(b) A ~~*~~ The shutdown cooling pump may be removed from operation for up to 2 hours per 8 hour period provided the other loop is OPERABLE.

(c) ~~##~~ The RHR shutdown cooling mode loop may be removed from operation during hydrostatic testing.

(d) ~~**~~ Whenever two or more SDC RHR subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

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REACTOR COOLANT SYSTEM

COLD SHUTDOWN

LIMITING CONDITION FOR OPERATION

(6.P)

3.~~4.9.2~~ Two# shutdown cooling ~~mode~~ loops ~~of the residual heat removal (RHR) system~~ shall be OPERABLE and, unless at least one recirculation pump is in operation, at least one shutdown cooling ~~mode~~ loop shall be in operation*,## with each loop consisting of at least:

1. One OPERABLE ~~RHR~~ SDC pump, and
2. One OPERABLE ~~RHR~~ SDC heat exchanger.

APPLICABILITY: OPERATIONAL ~~CONDITION~~ MODE 4.

ACTION:

1. With less than the above required SDC ~~RHR shutdown cooling mode~~ loops OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable ~~RHR shutdown cooling mode~~ loop.
2. With no SDC ~~RHR shutdown cooling mode~~ loop or recirculation pump in operation, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature and pressure at least once per hour.

SURVEILLANCE REQUIREMENTS

(6.P)

4.~~4.9.2~~ At least one SDC ~~shutdown cooling mode~~ loop ~~of the residual heat removal system~~, recirculation pump or alternate method shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

(a) #One ~~RHR~~ shutdown cooling ~~mode~~ loop may be inoperable for up to 2 hours for surveillance testing provided the other loop is OPERABLE and in operation.

(b) *The shutdown cooling pump may be removed from operation for up to 2 hours per 8 hour period provided the other loop is OPERABLE.

(c) ##The shutdown cooling ~~mode~~ loop may be removed from operation during hydrostatic testing.

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REACTOR COOLANT SYSTEM

3/4.4.9 RESIDUAL HEAT REMOVAL

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.9.1 Two# shutdown cooling mode loops of the residual heat removal (RHR) system shall be OPERABLE and, unless at least one recirculation pump is in operation, at least one shutdown cooling mode loop shall be in operation*,##, with each loop consisting of at least:

a. One OPERABLE RHR pump, and

b. One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATIONAL ~~CONDITION~~ MODE 3, with reactor vessel pressure less than the RHR cut-in permissive setpoint.

ACTION:

1. With less than the above required RHR shutdown cooling mode loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible. Within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop. Be in at least COLD SHUTDOWN within 24 hours.**

2. With no RHR shutdown cooling mode loop in operation, immediately initiate corrective action to return at least one loop to operation as soon as possible. Within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature and pressure at least once per hour.

SURVEILLANCE REQUIREMENTS

4.4.9.1 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

recirculation pump

#One RHR shutdown cooling mode loop may be inoperable for up to 2 hours for surveillance testing provided the other loop is OPERABLE and in operation.

*The shutdown cooling pump may be removed from operation for up to 2 hours per 8 hour period provided the other loop is OPERABLE.

(b) ##The RHR shutdown cooling mode loop may be removed from operation during hydrostatic testing.

(c) **Whenever two or more RHR subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

(a) Each shutdown cooling subsystem is considered OPERABLE if it can be manually aligned (remote or local) in the shutdown cooling mode for removal of decay heat. The provisions of Specification 3.0.D are not applicable.

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REACTOR COOLANT SYSTEM

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COLD SHUTDOWN

LIMITING CONDITION FOR OPERATION

G.P (a) subsystems #

3.4.9.2 Two shutdown cooling mode loops of the residual heat removal (RHR) system shall be OPERABLE and, unless at least one recirculation pump is in operation, at least one shutdown cooling mode loop shall be in operation*,## with each loop consisting of at least:
subsystem

capable of circulating reactor coolant (b)

1. ~~a.~~ One OPERABLE RHR pump, and

2. ~~b.~~ One OPERABLE RHR heat exchanger.

APPLICABILITY: OPERATI~~ONAL~~ ~~CONDITION~~ MODE 4.

ACTION:

subsystems

1. ~~a.~~ With less than the above required RHR shutdown cooling mode loops OPERABLE, within one hour and at least once per 24 hours thereafter, demonstrate the operability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop. subsystem

subsystem OPERABLE, immediately initiate corrective action to return subsystem status as soon as possible.

with a recirculation pump

~~b.~~ With no RHR shutdown cooling mode ~~loop in operation~~, within one hour establish reactor coolant circulation by an alternate method and monitor reactor coolant temperature and pressure at least once per hour.

SURVEILLANCE REQUIREMENTS

G.P subsystem

4.4.9.2 At least one shutdown cooling mode loop of the residual heat removal system or alternate method shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

recirculation pump

#One RHR shutdown cooling mode loop may be inoperable for up to 2 hours for surveillance testing provided the other loop is OPERABLE and in operation.

*The shutdown cooling pump may be removed from operation for up to 2 hours per 8 hour period provided the other loop is OPERABLE.

(b) ##The RHR shutdown cooling mode loop may be removed from operation during hydrostatic testing.