ATTACHMENT

ComEd Response to NRC RAI

Section 3/4.2, "Instrumentation"

Generic Questions

1. In review of proposed Technical Specification Upgrade Program (TSUP) Section 3.2, the No Significant Hazards Consideration for this application is 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 the application and supplement the application by providing an accurate and complete No Significant Hazards Consideration.

   ComEd Response:
   This is provided in Enclosure 1.

2. In review of proposed TSUP Section 3.2 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.

   ComEd Response:

   A) Administrative Changes

      ComEd has revised the current Dresden and Quad Cities TS (CTS) to incorporate non-technical, administrative changes into the TSUP section 3/4.2 (Instrumentation). The proposed changes to the Dresden and Quad Cities CTS are based upon the accepted NRC Standard Technical Specifications (BWR-STS), contained in NUREG-0123, Revision 4 "Standard Technical Specifications General Electric Plants BWR/4." These administrative changes are intended to incorporate human factor principles into the form and structure of the TS so that they would be easier to use for plant operation's personnel. These changes are editorial in nature or involve the reorganization or reformatting of requirements without affecting technical content of the current TS or operational requirements. Therefore, these are administrative changes to the CTS, and do not represent a relaxation of the CTS. Examples of these administrative changes include:

      1. Clarification of applicability to specific modes (as referenced in the associated instrumentation tables);
      2. Addition of unambiguous Action statements within the LCO; the capitalization of definition-specific nomenclature (i.e. CHANNEL and TRIP SYSTEM);
      3. Revision of the BWR-STS numbering system (i.e. LCO, SR, and Table numbers);
      4. Relocation of certain requirements to other documents (i.e. Offsite Dose Calculation Manual - ODCM; UFSAR; and procedures);
      5. Incorporation of clarified BWR-STS and plant-specific terminology (i.e. proposed

"OPERATIONAL MODE" versus "OPERATIONAL CONDITION" and proposed "Main Steam Line Tunnel Temperature - High" versus the CTS nomenclature "High temperature main steamline tunnel).

These administrative changes do not represent a relaxation of the current requirements or licensing basis, as defined in the UFSAR. The equipment and instrumentation used to meet the requirements defined in the TSUP have not changed, and are equivalent to the new description. Therefore, the proposed nomenclature represents an administrative change, and as such, is not a relaxation of the CTS.

B) Dresden and Quad Cities CTS LCOs and Applicability Requirements

The Dresden and Quad Cities CTS contain Applicability and Objective statements at the beginning of TS Section 3/4.2 and 3.2/4.2 (Instrumentation). These statements are generic in nature and do not provide any useful information to the user of the technical specifications. The proposed changes delete the Objective statement and clarify Limiting Condition for Operation (LCO) and Applicability requirements for each functional group of instruments (i.e. Isolation Actuation, ECCS Actuation, etc.). The applicable mode for each instrument is specified in the associated TSUP instrumentation table. This is consistent with BWR-STS format and provides a more user-friendly, and unambiguous presentation of requirements for the instrumentation systems at Dresden and Quad Cities. These proposed changes represent a more conservative operating practice, and therefore are not a relaxation of the CTS.

1. Dresden and Quad Cities CTS 3.2.A; Primary Containment Isolation Functions

Dresden and Quad Cities CTS 3.2.A (and associated CTS Table) delineates the LCO requirement for Primary Containment Isolation functions, including instrumentation for isolation of the Main Steam Lines, the Reactor Core Isolation Cooling (RCIC) system (Quad Cities only), the Isolation Condenser system (Dresden only), and the High Pressure Coolant Injection (HPCI) system. These CTS requirements have been incorporated into TSUP 3.2.A, "Isolation Actuation," (and associated Table 3.2.A-1). The TSUP requires operability of specified Isolation Actuation instrumentation as listed in Table 3.2.A-1, with minimum operable channels, applicable operational modes, and associated trip setpoints. The CTS requirement has been renamed to the BWR-STS nomenclature of "Isolation Actuation." This is an administrative change to the CTS, and as such does not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

In addition to the instrumentation requirements for Primary Containment Isolation, the TSUP 3.2.A (and Table 3.2.A-1) has also explicitly defined, in separate sections of Table 3.2.A-1, the instrumentation requirements for the isolation of Secondary Containment (also see Item B.4 - Refueling Floor Radiation Monitors below), the Reactor Water Cleanup (RWCU) system, the RCIC system (Quad Cities only), the Isolation Condenser system (Dresden only), the HPCI system, and the Shutdown Cooling system (RHR Shutdown Cooling Mode at Quad Cities). This is consistent with BWR-STS format, and represents a more clear and unambiguous delineation of requirements for isolation actuation instrumentation. Therefore, the modified format does not represent a relaxation of CTS.

TSUP 3.2.A is consistent with the Dresden and Quad Cities CTS requirements, and is equivalent to BWR-STS 3.3.2, except as described in items C. and D. below. Therefore, the TSUP does not

represent a relaxation of the CTS.

2. Dresden and Quad Cities CTS 3.2.B; Core and Containment Cooling Systems

   Dresden and Quad Cities CTS 3.2.B (and associated CTS Table) delineates the LCO requirement for the initiation and control functions of Core and Containment Cooling System instrumentation. These CTS requirements have been incorporated into TSUP 3.2.B, "Emergency Core Cooling Systems (ECCS) Actuation" (and associated Table 3.2.B-1). The TSUP requires operability of specified ECCS actuation instrumentation as listed in Table 3.2.B-1, with minimum operable channels, applicable operational modes, and associated trip setpoints. The CTS requirement also states that the instrumentation must be operable when the system(s) it initiates are required to be operable.

   The CTS requirement has been renamed to the BWR-STS nomenclature. This is an administrative change to the CTS, and as such does not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

   TSUP 3.2.B is consistent with the Dresden and Quad Cities CTS requirements, and is equivalent to BWR-STS 3.3.3, except as described in items C. and D. below. The CTS requirement for operability of instrumentation when the initiated system is required to be operable has been incorporated into the "Applicable Operational Mode" column of TSUP Table 3.2.B-1.

3. Dresden and Quad Cities CTS 3.2.C; Control Rod Block Actuation

   i. Dresden CTS 3.2.C.1 and Quad Cities CTS 3.2.C.1

      Dresden and Quad Cities CTS 3.2.C.1 (and associated CTS Table) delineates the LCO requirement for Control Rod Block Actuation instrumentation. These CTS requirements have been incorporated into TSUP 3.2.E (and associated Table 3.2.E-1). The TSUP requires operability of control rod block instrumentation as listed in Table 3.2.E-1, with minimum operable channels, applicable operational modes, and associated trip setpoints. TSUP 3.2.C.1 is consistent with the Dresden and Quad Cities CTS requirements, and is equivalent to BWR-STS 3.3.6, except as described in items C. and D. below.

   ii. Dresden CTS 3.2.C.2 and Quad Cities CTS 3.2.C.2

      Dresden and Quad Cities CTS 3.2.C.2 provides a relaxation (with a time limitation) from the minimum operable channel requirements for the rod block monitor during maintenance or testing. This has been deleted from the TSUP. The CTS requirement is not consistent with BWR-STS guidance, and the deletion of the less stringent requirement represents a more conservative operating practice. Therefore the deletion of CTS 3.2.C.2 does not represent a relaxation of CTS.

4. Dresden and Quad Cities CTS 3.2.D; Refueling Floor Radiation Monitors

   i. Dresden and Quad Cities CTS 3.2.D.1

      Dresden and Quad Cities CTS 3.2.D.1 delineates the operability, applicability, and minimum channel requirements for the Refueling Floor Radiation Monitors. These CTS

requirements have been incorporated into TSUP Table 3.2.A-1, Item 2.d, "Refueling Floor Radiation - High." The proposed operability and minimum channel requirements in Table 3.2.A-1, Item 2.d are consistent with the CTS requirements. TSUP 3.2.D.1 is consistent with the Dresden and Quad Cities CTS requirements, and is equivalent to BWR-STS Table 3.3.2-1, Item 2.e, except as described below and in items C. (Response Time LCO and Surveillance Requirements) and D. (Instrumentation Trip Setpoints).

The CTS requirement has been renamed for clarification and consistency with BWR-STS nomenclature. This is an administrative change to the CTS, and as such does not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

The CTS applicability has been revised from "whenever irradiated fuel or components are present in the fuel storage pool and during refueling or fuel movement operations" to Operational Modes 1, 2, 3 and ** (i.e. when handling irradiated fuel in the secondary containment). This applicability is equivalent to the BWR-STS applicability (NUREG 0123 and NUREG 1433). The current applicability would require operability of both monitors at all times, given that there is always irradiated fuel in the spent fuel pools. The implied CTS action with one of the two required monitors inoperable, would be to halt all fuel movement operations. The proposed TSUP applicability during the handling of irradiated fuel in the secondary containment is consistent with the CTS applicability, and is an administrative enhancement of the CTS requirements. The TSUP applicability provides a clear and unambiguous delineation of requirements, and is not a relaxation of CTS.

ii. Dresden and Quad Cities CTS 3.2.D.2

Dresden and Quad Cities CTS 3.2.D.2 specifies the allowable outage time (AOT) and required action for an inoperable channel (one of two refueling floor radiation monitors). This CTS AOT and action have been replaced by TSUP 3.2.A, Action 3, and Table 3.2.A-1, Action 24. TS 3.2.A, Action 3 states that if the minimum operable channels is less than required for both trip systems, then one trip system shall be placed in the tripped condition within one hour, and the actions specified in the table implemented. Table 3.2.A-1, Action 24 requires establishment of secondary containment within one hour (with the standby gas treatment system operating). The CTS allows 24 hours prior to establishing secondary containment. The proposed actions are more conservative than the CTS in that if a refueling floor radiation monitor is found inoperable, the trip system will be tripped within one hour, and secondary containment established within two hours. Therefore the TSUP provisions are not a relaxation of the CTS.

iii. Dresden and Quad Cities CTS 3.2.D.3

Dresden and Quad Cities CTS 3.2.D.3 specifies the trip setpoint for the refueling floor radiation monitors. This has been relocated to TSUP Table 3.2.A-1, Item 2.d, column 2. The TSUP provisions are equivalent to the CTS. Therefore, the TSUP provisions are not a relaxation of the CTS.

iv. Dresden and Quad Cities CTS 3.2.D.4

Dresden and Quad Cities CTS 3.2.D.4 specifies the required action for two inoperable

channels (both refueling floor radiation monitors). This CTS action requires immediate isolation of secondary containment and standby gas treatment system operation. The CTS action has been replaced by TSUP 3.2.A, Action 3, and Table 3.2.A-1, Action 24. TS 3.2.A, Action 3 states that if the minimum operable channels is less than required for both trip systems, then one trip system shall be placed in the tripped condition within one hour, and the actions specified in the table implemented. Table 3.2.A-1, Action 24 requires establishment of secondary containment within one hour (with the standby gas treatment system operating). This is equivalent to BWR-STS Table 3.3.2-1 Action 26. The TSUP represents a relaxation of the CTS, in that the TSUP allow one hour prior to tripping the trip system (which will automatically establish secondary containment and actuate the standby gas treatment system). However, the proposed change does not represent a significant reduction in safety. The extended period (one hour) to establish secondary containment is consistent with similar plant Technical Specification provisions and NRC-approved requirements (BWR-STS). The one-hour completion time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The one-hour period is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

5. Dresden and Quad Cities CTS 3.2.E; Post Accident Instrumentation

   Dresden and Quad Cities CTS 3.2.E (and associated CTS tables) delineates the LCO requirement for post accident monitoring instrumentation. This CTS requirement has been incorporated into TSUP 3.2.F, "Accident Monitoring" (and associated Tables 3.2.F-1). The CTS requirement has been renamed to the BWR-STS nomenclature. This is an administrative change to the CTS, and as such does not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

   TSUP 3.2.F is consistent with the Dresden and Quad Cities CTS requirements. Therefore, the TSUP does not represent a relaxation of the CTS.

6. Dresden CTS 3/4.2.F and 3/4.2.G; Quad Cities CTS 3/4.2.G and 3/4.2.H; Radioactive Liquid Effluent Instrumentation and Radioactive Gaseous Instrumentation

   Dresden CTS 3/4.2.F and Quad Cities CTS 3/4.2.G (and associated CTS tables - Dresden CTS Tables 3.2.4 and 4.2.2; Quad Cities CTS Tables 3.2-5, and 4.2-2) delineate the LCO requirements and actions for the Radioactive Liquid Effluent Instrumentation. Dresden CTS 3.2.G and Quad Cities CTS 3.2.H (and associated CTS tables - Dresden CTS Tables 3.2.5 and 4.2.3; Quad Cities CTS Tables 3.2-6, 4.2-3, and the applicable item in 4.2-1) delineate the LCO requirements and actions for the Radioactive Gaseous Effluent Instrumentation. These requirements have been relocated to the Offsite Dose Calculation Manual (ODCM) for each station, in accordance with the guidance provided in Generic Letter 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program."

   i. Dresden ODCM Tables 12.2-1 and 12.2-2 do not include the Dresden CTS requirements and associated Action for "Tank Level Indicating Devices" (Tables 3.2.4 and 4.2.2). These requirements were inadvertently omitted from the Dresden ODCM, and will be added as part of the next annual ODCM update.

ii. Dresden ODCM Tables 12.2-3 and 12.2-4 do not include the Dresden CTS requirements and associated Action for "Off-Gas Radiation Monitor" (Tables 3.2.5 and 4.2.3). These requirements were inadvertently omitted from the Dresden ODCM, and will be added as part of the next annual ODCM update.

iii. Dresden ODCM Tables 12.2-3 and 12.2-4 do not include the Dresden CTS requirements for the following instruments:

MVRS Process Exhaust Radiation Monitor
MVRS Process Exhaust Particulate Sampler
MVRS Process Exhaust Iodine Sampler
MVRS Process Exhaust Particulate Sampler

These monitoring instruments were added to the Dresden CTS by Amendments 93/88 in order to utilize a Mobile Volume Reduction System (MVRS) for the treatment of licensed material by incineration . This system was never installed nor made operational at Dresden Station, nor is it planned for installation. Based upon this information, the radiation monitoring instruments associated with the MVRS are no longer applicable for Dresden Station. Therefore, the deletion of these monitoring instrument requirements does not represent a reduction in safety or a relaxation of the CTS.

7. Quad Cities CTS 3.2.F; Control Room Ventilation System Isolation

i. Quad Cities CTS 3.2.F.1 describes the process variable instrumentation that isolates the Control Room Ventilation System (high drywell pressure, low water level, high main steamline flow, high toxic gas concentration, high radiation in either of the reactor building exhaust ducts, and manual isolation). This description has not been retained in the TSUP, as it provides design information more suited for owner-controlled documents (i.e. UFSAR). Therefore, the deletion of the description does not represent a relaxation of CTS.

Quad Cities CTS 3.2.F.1 also delineates the LCO requirement for the Control Room Ventilation System isolation instrumentation. This is accomplished by referencing CTS Table 3.2-1 (Primary Containment Isolation Instrumentation); CTS 3.2.H (Radioactive Gaseous Effluent Instrumentation); and CTS 3.2.F.2.

CTS Table 3.2-1 defines the required instrumentation for Control Room Ventilation system isolation by referencing a modifying footnote for each of the applicable instruments (high drywell pressure, low water level, and high main steamline flow). This footnote [Quad Cities CTS Table 3.2-1, note (5)] states that the modified instrumentation also isolates the control room ventilation system. The applicable instruments in Quad Cities CTS Table 3.2-1 do not include high radiation in either of the reactor building exhaust ducts, high toxic gas concentration, and manual isolation. The instrumentation requirements for high toxic gas concentration are discussed in Quad Cities CTS 3.2.F.2. The instrumentation requirements for high radiation in either of the reactor building exhaust ducts are defined in CTS 3.2.H and CTS Table 3.2-6.

The instrumentation requirements in Quad Cities CTS Table 3.2-1 [as modified by CTS note (5)] are incorporated into the proposed Quad Cities TSUP [TSUP Table 3.2.A-1, as modified by proposed note (k)]. TSUP Table 3.2.A-1, note (k) modifies Items 2.a (Reactor

Vessel Water Level - Low); 2.b (Drywell Pressure - High); 2.c (Reactor Building Ventilation Exhaust Radiation - High); 2.d (Refueling Floor Radiation - High); and 3.d (Main Steam Line Flow - High). TSUP note (k) is equivalent to CTS note (5). TSUP Table 3.2.A-1 requirements for Control Room Ventilation system isolation instrumentation are equivalent to CTS requirements. Therefore the TSUP requirements do not represent a relaxation of the CTS.

In addition, TSUP Table 3.2.A-1 provides Control Room Ventilation system isolation instrumentation requirements for the refueling floor radiation monitors (item 2.d - Refueling Floor Radiation - High). This provides additional requirements to the CTS requirements, and is therefore more conservative than the CTS.

ii. Quad Cities CTS 3.2.F.2 delineates the LCO and setpoint for the toxic gas detection system (ammonia analyzer). The CTS also states that the provisions of Specification 3.0.A are not applicable. These requirements have been incorporated into proposed Quad Cities TSUP 3.2.K, "Toxic Gas Monitoring."

TSUP incorporates the CTS requirements, and enhances the CTS by specifically stating the applicability and required actions. Since the required actions are explicitly stated in TSUP 3.2.K, the CTS statement that the provisions of Specification 3.0.A are not applicable has not been retained. This does not represent a relaxation of CTS.

8. Dresden CTS 3.2.H - Recirculation Pump Trip Initiation; Quad Cities TSUP 3.2.C - ATWS - RPT

Dresden CTS 3.2.H (and associated Dresden CTS Table 3.2.7) delineates the LCO requirements for the recirculation pump trip system. These requirements have been incorporated into TSUP (for both Dresden and Quad Cities) 3.2.C, "ATWS - RPT" (and associated TSUP Table 3.2.C-1). This is a new requirement with respect to the Quad Cities CTS.

The CTS requirement has been renamed to the BWR-STS nomenclature. This is an administrative change to the Dresden CTS. As such, the proposed TSUP requirements do not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

TSUP 3.2.C is consistent with the Dresden CTS requirements and BWR-STS 3.3.4.1, "ATWS Recirculation Pump Trip System Instrumentation."

Dresden CTS Table 3.2.7 requirements have been incorporated into TSUP Table 3.2.C-1 except as described below:

i. The Dresden CTS Table 3.2.7 Trip Functions have been renamed to the BWR-STS nomenclature. This is an administrative change to the Dresden CTS. As such, the proposed changes do not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

ii. The CTS Table action statement has been relocated and incorporated into TSUP 3.2.C, Actions 1, 2, 3, 4, and 5. These actions represent a revision of the existing action requirement, and are consistent with the plant-specific design and the actions for Grand Gulf.

The proposed format is consistent with BWR-STS format, and represents a more clear and unambiguous delineation of requirements for isolation actuation instrumentation. Therefore, the relocation does not represent a relaxation of CTS. The proposed Actions are consistent with BWR-STS, as modified for plant-specific design and previously approved requirements. Therefore, the proposed actions are not a significant reduction in the margin of safety.

iv. The CTS Table 3.2.7 applicability requirements have been relocated and incorporated into TSUP 3.2.C, Applicability. In addition, CTS Table 3.2.7, note (d), which defines "RUN MODE" as "MODE 1" has been deleted. This is consistent with BWR-STS format, and represents a clear and unambiguous delineation of requirements for isolation actuation instrumentation. Therefore, the proposed changes do not represent a relaxation of CTS.

v. The CTS Table 3.2.7 setpoint for "High Reactor Pressure" has been revised from "greater than or equal to 1230 psig and less than or equal to 1250 psig" to "less than or equal to 1250 psig." The lower bound of the CTS setpoint ("greater than or equal to 1230 psig"), is designed to prevent inadvertent trips, and as such has no automatic protection function. Therefore this value is unnecessary in the LCO, and are more appropriate for relocation to owner-controlled procedures. Changes to the acceptance criteria detailed in procedures will continue to be controlled by the provisions of 10 CFR 50.59. This deviation from BWR-STS guidelines is an administrative change, and therefore is not a significant reduction in safety.

C) Response Time LCO and Surveillance Requirements

The BWR-STS requirements for Instrument System Response Times (3.3.2, Table 3.3.2-3 and 3.3.3, Table 3.3.3-3) and the corresponding BWR-STS response time surveillance requirements (4.3.2.2 and 4.3.3.3) have not been incorporated into TSUP sections 3/4.2.A (Isolation Actuation) and 3/4.2.B (ECCS Actuation). These requirements are not in the CTS. In addition, the NRC has approved (by SER dated December 28, 1994 for Licensing Topical Report NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements") and recommended (Generic Letter (GL) 93-08, "Relocation of Technical Specification Tables of Instrument Response Time Limits") the relocation of selected Response Time Testing requirements from the TS to the FSAR. Based upon current requirements, the NRC SER, and GL 93-08, the current licensing basis is maintained, and the TSUP provisions do not represent a relaxation of the CTS.

D) Instrumentation Trip Setpoints

The BWR-STS requirements for trip setpoints have been incorporated into the applicable instrumentation system LCO tables (as listed below). TSUP relocates the setpoint values from a separate BWR-STS setpoint table to the LCO table for each applicable instrumentation system (also listed below).

Instrumentation System	BWR-STS	TSUP
Isolation Actuation	3.3.2; Table 3.3.2-2	3.2.A; Table 3.2.A-1
ECCS Actuation	3.3.3; Table 3.3.3-2	3.2.B; Table 3.2.B-1
ATWS-RPT	3.3.4.1; Table 3.3.4.1-2	3.2.C; Table 3.2.C-1
RCIC Actuation (Quad Cities only)	3.3.5; Table 3.3.5-2	3.2.D; Table 3.2.D-1

Isolation Condenser (Dresden only)	N/A	3.2.D; Table 3.2.D-1
Control Rod Block	3.3.6; Table 3.3.6-2	3.2.E; Table 3.2.E-1
Suppression Chamber and Drywell Spray Actuation	3.3.9; Table 3.3.9-2	3.2.I; Table 3.2.I-1
Feedwater Pump Trip	3.3.9; Table 3.3.9-2	3.2.J: Table 3.2.J-1

TSUP incorporates the "Allowable Values" column of the applicable BWR-STS table (BWR-STS column 3) as the "Trip Setpoint" (TSUP column 2), and has not incorporated the "Trip Setpoint" column (BWR-STS column 2) and values. The specific values for "Trip Setpoint" in TSUP are consistent with the safety analysis for Dresden and Quad Cities Stations.

The TSUP "Trip Setpoint" column and values are equivalent to the CTS term "Trip Setting," which is equivalent to the BWR-STS "Allowable Values."

The BWR-STS requirements for "Trip Setpoint" have not been adopted in the TSUP. This deviation from BWR-STS guidelines maintains consistency with current Technical Specification requirements. The BWR-STS "Trip Setpoint" defines requirements which are necessary as a result of channel-specific drift characteristics, as opposed to a safety analysis value which actuates a protective function. The values which have not been incorporated into the TSUP (BWR-STS "Trip Setpoint") represent information related to system design, purpose, and operation. Therefore these values are unnecessary in the LCO, and are more appropriate for relocation to owner-controlled procedures. Changes to the acceptance criteria detailed in procedures will continue to be controlled by the provisions of 10 CFR 50.59. This deviation from BWR-STS guidelines is an administrative change, and therefore is not a significant reduction in safety.

E) BWR-STS LCOs not Incorporated in TSUP

1. Non-applicable Instrumentation

The BWR-STS instrumentation specifications (and associated tables) listed below have not been incorporated into the TSUP. These requirements are not in the CTS, and are not part of the plant design for Dresden and Quad Cities Stations. This deviation from BWR-STS guidelines is an administrative change, and therefore, is not a significant reduction in safety.

Instrumentation System	BWR-STS
End-of-Cycle Recirculation Pump Trip	3.3.4.2
Remote Shutdown Monitoring	3.3.7.4
Chloride Intrusion Monitors	3.3.7.9
Loose Part Detection System	3.3.7.11
Turbine Overspeed Protection System	3.3.8

2. Owner-Controlled Documents

The BWR-STS instrumentation specifications (and associated tables) listed below have not been incorporated into the TSUP. These requirements are not in the CTS, and are more appropriate for owner-controlled documents. This deviation from BWR-STS guidelines is an administrative change, and therefore, is not a significant reduction in safety.

Instrumentation System	BWR-STS
Seismic Monitoring	3.3.7.2
Meteorological Monitoring	3.3.7.3
Fire Detection Instrumentation	3.3.7.10

G) Generic Letter 87-09 Guidance

The STS action provisions which delineate a TS 3.0.4 exception are not incorporated into the TSUP. This is consistent with the guidance of Generic Letter 87-09. Therefore, this does not represent a relaxation of the CTS.

H) CTS Surveillance Requirements (SRs)

1. Dresden and Quad Cities CTS 4.2.A; Primary Containment Isolation Functions

   Dresden and Quad Cities CTS 4.2.A delineate the surveillance requirements (SRs) for the instrumentation which actuates Primary Containment Isolation functions. The CTS SR also references an associated CTS Table. This CTS table also includes instrumentation for isolation of the Main Steam Lines, the Reactor Core Isolation Cooling (RCIC) system (Quad Cities only), the Isolation Condenser system (Dresden only), and the High Pressure Coolant Injection (HPCI) system. This additional instrumentation is consistent with the corresponding CTS LCO table. The CTS SR and associated table has been incorporated into TSUP 4.2.A.1 (and associated TSUP Table 4.2.A-1).

   TSUP 4.2.A.1 is equivalent to CTS 4.2.A and BWR-STS 4.3.2.1, with the exception that the CTS requirement for a logic system functional test [CTS 4.2.A and Quad Cities CTS Table 4.2-1, note (7)] has been relocated to TSUP 4.2.A.2. This provides an explicit surveillance requirement and frequency for a logic system functional test, and is consistent with the format and content of BWR-STS 4.3.2.2. The relocation and clarification of the logic system functional test requirement in CTS 4.2.A is administrative, and does not represent a relaxation of CTS.

2. Dresden and Quad Cities CTS 4.2.B; Core and Containment Cooling Systems - Initiation and Control

   Dresden and Quad Cities CTS 4.2.B delineate the surveillance requirements (SRs) for the initiation and control instrumentation associated with the Core and Containment Cooling Systems. The CTS SR also references the associated CTS Table. The CTS SR has been incorporated into TSUP 4.2.B.1 (and associated TSUP Table 4.2.B-1).

   TSUP 4.2.B is equivalent to CTS 4.2.B and BWR-STS 4.3.3.1, with the exception that the CTS requirement for a logic system functional test [CTS 4.2.B and Quad Cities CTS Table 4.2-1, note (7)] has been relocated to TSUP 4.2.B.2. This provides an explicit surveillance requirement and frequency for a logic system functional test, and is consistent with the format and content of BWR-STS 4.3.3.2. The relocation and clarification of the logic system functional test requirement in CTS 4.2.A is administrative, and does not represent a relaxation of CTS.

3. Dresden and Quad Cities CTS 4.2.C; Control Rod Block Actuation

   Dresden and Quad Cities CTS 4.2.C delineate the surveillance requirements (SRs) for the

instrumentation which actuates the control rod blocks. The CTS SR also references the associated CTS Table. The CTS SR has been incorporated into TSUP 4.2.E (and associated TSUP Table 4.2.E-1). TSUP 4.2.E is equivalent to CTS 4.2.C and BWR-STS 4.3.6. Therefore the proposed change does not represent a relaxation of the CTS.

4. Dresden and Quad Cities CTS 4.2.D; Refueling Floor Radiation Monitors

   Dresden and Quad Cities CTS 4.2.D delineates the surveillance requirements (SRs) for the Refueling Floor Radiation Monitors. The CTS SR references the associated CTS table for the specific instrument surveillance requirements. These CTS instrument surveillance requirements have been incorporated into TSUP Table 4.2.A-1, Item 2.d, "Refueling Floor Radiation - High." The relocation of the CTS SR for the refueling floor radiation monitors is consistent with BWR-STS format, and does not represent a relaxation of CTS.

   CTS 4.2.D also requires isolation of Reactor Building Ventilation (secondary containment isolation dampers) and initiation of the standby gas treatment system once per operating cycle. This has been relocated to TSUP 4.7.P.4.b.1 and 4.7.P.4.b.2. These TSUP SRs require verification that the SBGT filter train starts and isolation dampers open on manual initiation and simulated automatic initiation.

5. Dresden and Quad Cities CTS 4.2.E; Postaccident Instrumentation

   Dresden and Quad Cities CTS 4.2.E delineates the surveillance requirements for Postaccident Instrumentation by stating that the postaccident instrumentation shall be functionally tested and calibrated as indicated in the associated CTS table. The CTS SR also references the associated CTS Table. The CTS SR has been modified and incorporated into TSUP 4.2.F. The surveillance frequencies in the associated CTS tables have been incorporated into TSUP Table 4.2.F-1).

   The proposed TSUP 4.2.F SR is equivalent to BWR-STS 4.3.7.5. However, the proposed SR deletes the CTS requirement for a functional test of the postaccident instrumentation, and adds a channel check requirement. The associated CTS tables (Dresden CTS Table 4.2.4 and Quad Cities CTS 4.2-2) do not specify a functional test frequency or requirement, with the exception of the Main Steam Relief Valve Position Indicator, Acoustic Monitor. The functional test requirement for these instruments is provided as a table note to Dresden CTS Table 4.2.4 [note (1)] and Quad Cities CTS Table 4.2-2 [note "**"].

   The plant-specific design for this instrumentation does not meet the definition for a Channel Functional Test. The instrumentation is an indicator, as opposed to a switch or trip function. As such, it is not possible to perform a Channel Functional Test. Therefore, the CTS requirements for a functional test [Dresden CTS Table 4.2.4, note (1) and Quad Cities CTS Table 4.2-2, note "**"] are ambiguous, and have not been retained in TSUP. The proposed Channel Functional Test frequency of N/A is consistent with BWR-STS and NUREG-1433 requirements, and the plant-specific design. The proposed surveillance requirement provides a less ambiguous requirement, in that the proposed requirement clarifies the CTS relationship between CTS 4.2.E and the associated tables requirements (channel check and channel calibration). The proposed deletion of the CTS functional test requirement is not a significant reduction in the margin of safety, therefore, the proposed change does not represent a relaxation of the CTS.

6. Quad Cities CTS 4.2.F; Control Room Ventilation System Isolation

   Quad Cities CTS 4.2.F delineates the surveillance requirements for instrumentation which initiates isolation of the control room ventilation. The CTS SR also references the associated CTS table for isolation instrumentation (CTS Table 4.2-1). This table contains a specific section describing the SRs for instruments which initiate isolation of the Control Room Ventilation System (i.e. high drywell pressure, low water level, high main steamline flow, and the toxic gas analyzer). The CTS requirements have been incorporated into Quad Cities TSUP Table 4.2.A-1 as a footnote modifying the instruments which initiate the isolation function (high drywell pressure, low water level, and high main steamline flow) and into Quad Cities TSUP 4.2.K. The TSUP requirements are equivalent or more conservative than the CTS requirements. Therefore, the proposed change does not represent a relaxation of the CTS.

   The footnote to Quad Cities TSUP Table 4.2.K [Quad Cities TSUP Table 4.2.A-1, note (d)] states that the modified instrumentation (high drywell pressure, low water level, and high main steamline flow) also isolates the control room ventilation system.

   Quad Cities TSUP 4.2.K defines the surveillance requirements for the Toxic Gas Monitoring. The proposed requirements are equivalent to the CTS requirements, with a revision of the channel check requirement. The CTS requirement for a once per day channel check has been revised to the proposed requirement of once per 12 hours. This proposed requirement is more conservative than the CTS requirement.

7. Dresden CTS 4.2.H; Recirculation Pump Trip Initiation; Quad Cities TSUP 4.2.C - ATWS - RPT

   Dresden CTS 4.2.H (and associated Dresden CTS Table 4.2.5) delineates the surveillance requirements for instrumentation associated with the recirculation pump trip system. These requirements have been incorporated into TSUP (for both Dresden and Quad Cities) 4.2.C, "ATWS - RPT" (and associated TSUP Table 4.2.C-1).

   The Dresden CTS requirement has been renamed to the BWR-STS nomenclature. This is an administrative change to the Dresden CTS. As such, the proposed changes do not represent a relaxation of the CTS. The instrumentation used to monitor the parameter has not changed, and is equivalent to the BWR-STS nomenclature.

   The proposed Quad Cities TSUP requirement is an addition to the Quad Cities CTS. TSUP 4.2.C is consistent with the Dresden CTS requirements and BWR-STS 4.3.4.1, "ATWS Recirculation Pump Trip System Instrumentation." Therefore, TSUP 4.2.C does not represent a relaxation of the CTS.

   TSUP Table 4.2.C-1 surveillance requirements are equivalent to Dresden CTS Table 4.2.5 requirements, except as described below:

   i. The Dresden CTS surveillance frequency for instrument functional test has been revised from quarterly to monthly in TSUP Table 4.2.C-1 for both ATWS-RPT instruments. This is more conservative than the CTS.

   ii. The Dresden CTS surveillance frequency for channel check has been revised from daily to shiftly in TSUP Table 4.2.C-1 for both ATWS-RPT instruments. This is more

conservative than the CTS.

I. TSUP LCOs and SRs not in the CTS

The following LCOs and SRs have been proposed as an addition to the Dresden and/or Quad Cities CTS requirements:

1. Quad Cities TSUP 3/4.2.D; Reactor Core Isolation Cooling (RCIC) Actuation Instrumentation

Quad Cities TSUP 3/4.2.D (and the associated TSUP Tables) is an addition to the CTS, and provides LCOs and SRs for the instrumentation which actuates the RCIC system. The proposed requirements are consistent with plant design (with respect to functional units and minimum operable channels) and BWR-STS 3/4.3.5, except as described below:

i. The BWR-STS requirements for trip setpoints have been incorporated into the TSUP by relocating the setpoint values from a separate BWR-STS setpoint table (Table 3.3.5-2) to the LCO table (TSUP Table 3.2.D-1). This is discussed in Item D above. Based upon this discussion, this deviation from BWR-STS guidelines is an administrative change, and therefore is not a significant reduction in safety.

ii. The BWR-STS nomenclature for the applicable functional units (BWR-STS Table 3.3.5-1, column 1) has been revised and clarified to Quad Cities specific nomenclature (TSUP Table 3.2.D-1, column 1). This deviation is administrative in nature, and therefore does not represent a reduction in safety.

iii. BWR-STS Table 3.3.5-1, notes (b), (c), and (d) have not been retained in TSUP Table 3.2.D-1. The BWR-STS notes provide design information which is more appropriate for owner-controlled documents (i.e. UFSAR, procedures, etc.). This deviation is administrative in nature, and does not represent a reduction in safety.

iv. BWR-STS Table 3.3.5-1, note (a) has been revised and clarified with respect to the action requirement when an instrumentation channel is placed in an inoperable status for surveillance testing. The clarification replaces the phrase "...at least one other OPERABLE channel in the same trip [system is monitoring that parameter, " with the phrase "... the functional unit maintains RCIC actuation capability." The clarified phrase maintains the intent of the BWR-STS requirement, and provides a clear and unambiguous requirement. Therefore, this deviation is administrative in nature, and therefore does not represent a reduction in safety.

v. Quad Cities TSUP Table 3.2.D-1 adds two notes [proposed notes (b) and (c)] in addition to the BWR-STS notes. These proposed notes provide necessary clarification of the minimum operable channels requirement and the reference point for reactor water level setpoints. These proposed notes enhance the BWR-STS requirements. This deviation is administrative in nature, and does not represent a reduction in safety.

vi. BWR-STS Table 4.3.5-1, notes (a) and (b) have not been retained in TSUP Table 4.2.D-1. The BWR-STS notes are inconsistent with the plant-specific surveillance frequencies. This deviation is administrative in nature, and does not represent a reduction in safety

2. Dresden TSUP 3/4.2.D; Isolation Condenser Actuation Instrumentation

Dresden TSUP 3/4.2.D (and the associated TSUP Tables) represents an enhancement and relocation of instrumentation requirements from Dresden CTS Tables 3.2.2 and 4.2.1. The Dresden TSUP provides LCOs and SRs for the instrumentation which actuates the Isolation Condenser system. The proposed requirements are consistent with BWR-STS 3/4.3.5 and the Dresden CTS (Tables 3.2.2 and 4.2.1), except as described in Comparison Matrix B-1 and below:

i. The BWR-STS requirements for trip setpoints have been incorporated into the TSUP by relocating the setpoint values from a separate BWR-STS setpoint table (Table 3.3.5-2) to the LCO table (TSUP Table 3.2.D-1). This is discussed in Item D above. Based upon this discussion, this deviation from BWR-STS guidelines is an administrative change, and is not a significant reduction in safety.

ii. The BWR-STS nomenclature for the applicable functional units (BWR-STS Table 3.3.5-1, column 1) has been revised and clarified to Dresden-specific nomenclature (TSUP Table 3.2.D-1, column 1). This deviation is administrative in nature, and does not represent a reduction in safety or a relaxation of the CTS.

iii. BWR-STS Table 3.3.5-1, notes (b), (c), and (d) have not been added to Quad Cities TSUP Table 3.2.D-1. The BWR-STS notes provide design information which is more appropriate for owner-controlled documents (i.e. UFSAR, procedures, etc.). This deviation is administrative in nature, and does not represent a reduction in safety. The BWR-STS notes have not been added to Dresden TSUP Table 3.2.D-1, since the notes are not applicable to plants with an Isolation Condenser.

iv. BWR-STS Table 3.3.5-1, Actions 51, 52, and 53 have not been added to TSUP due to the Dresden plant design. These BWR-STS Actions pertain to a standard RCIC system, and have no relation to the Dresden Station Isolation Condenser system. The TSUP Action is consistent with the plant design. This deviation is administrative in nature, and does not represent a reduction in safety.

v. BWR-STS Table 4.3.5-1, notes (a) and (b) have not been retained in TSUP Table 4.2.D-1. The BWR-STS notes are inconsistent with the plant design for the Dresden Isolation Condenser system instrumentation. This deviation is administrative in nature, and does not represent a reduction in safety.

vi. The CTS applicability for actuation instrumentation (Dresden CTS Table 3.2.2) has been modified from the current requirement of "fuel in the vessel and reactor pressure greater than 150 psig" to the TSUP applicability for Operational Modes 1, 2, and 3, with reactor pressure greater than 150 psig. The TSUP applicability is equivalent to the CTS applicability. In Operational Modes 4 and 5 (Cold Shutdown and Refuel), the reactor status is cold shutdown, and the temperature limitations eliminate the possibility of a high pressure condition. Therefore, the proposed change is not a relaxation of the CTS.

vii. The CTS setpoint for "Sustained High Reactor Pressure) has been enhanced in TSUP Table 3.2.D-1 to clarify the time that a high reactor pressure condition must be present in order to initiate the Isolation Condenser system. This proposed revision of the setpoint is administrative, and is not a relaxation of the CTS.

3. Dresden and Quad Cities 3/4.2.G; Source Range Monitoring

Dresden TSUP 3/4.2.G is an expansion of CTS 4.3.B.4. In addition to relocation of CTS 4.3.B.4, TSUP 3/4.2.G provides LCOs and SRs for the Source Range Monitoring instrumentation. The proposed requirements are consistent with plant design, and BWR-STS 3/4.3.7.6, except as described below:

i. BWR-STS 4.3.7.6.b.1 (CHANNEL FUNCTIONAL TEST requirements) have been revised to state that the functional test shall be performed "within 7 days prior to startup, and." This replaces the BWR-STS requirement of "Within 24 hours prior to moving the reactor mode switch from the Shutdown position, if not performed within the previous 7 days, and." The TSUP requirement is consistent with the intent of the BWR-STS requirement in that the functional test will have been performed within 7 days prior to startup. The proposed requirement is less verbose and easier to understand than the BWR-STS requirement. This deviation is administrative in nature, and does not represent a reduction in safety.

ii. In addition, TSUP incorporates proposed note (c) which states that the provisions of Specification 4.0.D are not applicable for entry into the applicable operational modes from operational mode 1, provided the required surveillance is performed within 12 hours after such entry. This note is consistent with a recently approved amendment for Perry Nuclear Power Plant (Amendment No. 41). The proposed note is necessary in order to verify operability when exiting Operational Mode 1. This deviation does not reduce the level of safety.

4. Dresden and Quad Cities 3/4.2.H; Explosive Gas Monitoring Instrumentation

TSUP 3/4.2.H, "Explosive Gas Monitoring Instrumentation ," are new instrumentation requirements not currently provided in the Dresden or Quad Cities CTS. The proposed LCOs, Action Requirements ,and Surveillance Requirements are consistent with BWR-STS format, with setpoints specified based upon plant-specific design. The proposed requirements are based on precedence at Perry Station and Generic Letter 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program." References to exclusions from the requirements of 3.0.D have been excluded per the guidance specified in GL 87-09. The proposed requirements represent an increase in the level of safety.

5. Dresden and Quad Cities 3/4.2.I; Suppression Chamber and Drywell Spray Actuation Instrumentation

TSUP 3/4.2.I is a relocation and expansion of specific items (Containment Spray Interlock-2/3 Core Height and Containment High Pressure) from Dresden CTS Tables 3.2.2 and 4.2.1; and Quad Cities CTS Tables 3.2-2 and 4.2-1. In addition to relocation of the CTS table items, TSUP 3/4.2.I provides LCOs, Action Requirements, and SRs for the Suppression Chamber and Drywell Spray Actuation Instrumentation. The proposed requirements are consistent with plant design (with respect to functional units, setpoints, and minimum operable channels), CTS requirements, and BWR-STS 3/4.3.7.9 (including the applicable parts of BWR-STS Tables 3.3.9-1 and 4.3.9-1), except as described below:

i. The BWR-STS requirements for trip setpoints have been incorporated into the TSUP by relocating the setpoint values from a separate BWR-STS setpoint table (Table 3.3.9-2) to

the LCO table (TSUP Table 3.2.I-1). This is discussed in Item D. (Instrumentation Setpoints) above. Based upon this discussion, this deviation from BWR-STS guidelines is an administrative change, and is not a significant reduction in safety.

ii. The BWR-STS nomenclature for the applicable functional units (BWR-STS Table 3.3.9-1, column 1) has been revised and clarified to Dresden and Quad Cities specific nomenclature (TSUP Table 3.2.I-1 and 4.2.I-1, column 1). This deviation is administrative in nature, and does not represent a reduction in safety.

iii. BWR-STS 3.3.9 Action b. has been relocated to TSUP Table 3.2.I-1, Action 80. TSUP Action 80.a is equivalent to TSUP 3.3.9 Action b.1. TSUP Action 80.b is equivalent to BWR-STS 3.3.9 Action b.2. This deviation is administrative in nature, and does not represent a reduction in safety.

iv. The CTS setpoint for "Containment Spray Interlock - 2/3 Core Height" (Dresden CTS Table 3.2.2 and Quad Cities CTS Table 3.2-2) has been modified in TSUP Table 3.2.I-1 to reflect the actual reactor water level, relative to the top of active fuel. TSUP Table 3.2.I-1, note (a) provides clarification to the Trip Setpoint column with respect to the reference point for reactor water level setpoints. This proposed revision of the setpoint (and associated table note) is administrative, and is not a relaxation of the CTS.

The CTS nomenclature "Containment Spray Interlock - 2/3 Core Height" has been renamed "Reactor Vessel Water Level - Low (Permissive)." This is consistent with BWR-STS nomenclature, and represents an administrative change, therefore is not a relaxation of CTS.

v. TSUP Table 3.2.I-1, note (b) modifies TSUP Action 80.a. The proposed note states that an inoperable instrument shall be placed in the tripped condition such that it will not prevent a containment spray. This proposed note is an enhancement to the BWR-STS, and requires specific manipulations in order to maintain containment cooling capability. This deviation does not represent a reduction in safety.

vi. The CTS applicability has been modified from the current requirement of "fuel in the vessel and reactor water temperature greater than 212°F, and prior to startup from cold shutdown (Quad Cities only)" to the TSUP applicability of Operational Modes 1, 2, and 3. The TSUP applicability is equivalent to the CTS applicability. In Operational Modes 4 and 5 (Cold Shutdown and Refuel), the reactor status is cold shutdown, and the temperature limitations eliminate the possibility of water temperature exceeding 212°F. Therefore, the proposed change is not a relaxation of the CTS.

vi. In TSUP Table 4.2.I-1, the BWR-STS channel check for drywell high pressure is not proposed since this instrument is a pressure switch that does not provide indication. Therefore, the instrumentation is unable to meet the requirements of a channel check, as defined in TSUP 1.0.

vii. In TSUP Table 4.2.I-1, the proposed channel calibration frequency for Reactor Vessel Water Level - Low (sesquiannual) is different from the BWR-STS guidelines of quarterly. However, the TSUP requirement is modified by proposed footnote (a), which states that trip units are calibrated at least once per 31 days, and transmitters are calibrated at the frequency in the table. This TSUP surveillance frequency and associated note retains the

CTS requirements. This deviation does not represent a reduction in safety.

6. Dresden and Quad Cities 3/4.2.J; Feedwater Pump Trip Instrumentation

TSUP 3/4.2.J (Feedwater Pump Trip Instrumentation) represents new instrumentation requirements not currently provided in the Dresden or Quad Cities CTS. The proposed LCOs, Action Requirements, and Surveillance Requirements are consistent with BWR-STS format, with setpoints specified based upon plant-specific design. The proposed requirements are consistent with BWR- STS format and content, and are based upon STS Section 3/4.3.9, as applicable to the Dresden and Quad Cities plant design (i.e. functional units, setpoints, and minimum operable channels). The proposed requirements are consistent with plant design (with respect to functional units, setpoints, and minimum operable channels), and BWR-STS 3/4.3.9 (including the applicable parts of BWR-STS Tables 3.3.9-1 and 4.3.9-1), except as described below:

i. The BWR-STS requirements for trip setpoints have been incorporated into the TSUP by relocating the setpoint values from a separate BWR-STS setpoint table (Table 3.3.9-2) to the LCO table (TSUP Table 3.2.J-1). This is discussed in Item D above. Based upon this discussion, this deviation from BWR-STS guidelines is an administrative change, and is not a significant reduction in safety.

ii. The BWR-STS nomenclature for the applicable functional units (BWR-STS Table 3.3.9-1, column 1) has been revised and clarified to Dresden and Quad Cities specific nomenclature (TSUP Table 3.2.J-1 and 4.2.J-1, column 1). This deviation is administrative in nature, and does not represent a reduction in safety.

iii. BWR-STS 3.3.9 Action c. has been relocated to TSUP Table 3.2.J-1, Action 90. TSUP Action 90.a is equivalent to TSUP 3.3.9 Action c.1, and TSUP Action 90.b is equivalent to BWR-STS 3.3.9 Action c.2, with the exception of the shutdown LCO time. BWR-STS 3.3.9 Actions c.1 and c.2 require the reactor to be in Startup within 6 hours if the required channels can not be re-established within the specified timeframe. TSUP Action 90 specifies and 8 hour shutdown LCO time. The proposed time frame is commensurate with the safety significance of the Trip Setpoint, and does not represent a significant reduction in safety from the BWR-STS requirement.

iv. In TSUP Table 3.2.J-1, the Minimum Channel requirement (2) is different than the BWR-STS requirement (3). The proposed requirement is consistent with the plant-specific design.

v. TSUP Table 3.2.J-1, note (a) provides clarification to the Trip Setpoint column with respect to the reference point for reactor water level setpoints. This deviation is administrative in nature, and does not represent a reduction in safety.

J. Dresden CTS Table 3.2.1 and Quad Cities CTS Table 3.2-1

Dresden CTS Table 3.2.1 and Quad Cities CTS Table 3.2-1 delineate the required instrumentation, minimum channel requirements, trip level settings, and action requirements for the Primary Containment Isolation functions, including instrumentation for isolation of the Main Steam Lines, the Reactor Core Isolation Cooling (RCIC) system (Quad Cities only), the Isolation Condenser system (Dresden only), and the High Pressure Coolant Injection (HPCI) system. These CTS

requirements have been incorporated into TSUP Table 3.2.A-1, "Isolation Actuation Instrumentation." In addition to the instrumentation requirements for Primary Containment Isolation, the TSUP Table 3.2.A-1 has also explicitly defined, in separate sections, the instrumentation requirements for the isolation of Secondary Containment (see Item B.4 - Refueling Floor Radiation Monitors), the Reactor Water Cleanup (RWCU) system, the RCIC system (Quad Cities only), the Isolation Condenser system (Dresden only), the HPCI system, and the Shutdown Cooling system (RHR Shutdown Cooling Mode at Quad Cities). This is consistent with BWR-STS format, and represents a clear and unambiguous delineation of requirements for isolation actuation instrumentation. Therefore, the modified format does not represent a relaxation of CTS.

The attached Comparison Matrix A-1 provides a tabular comparison of the CTS table nomenclature and requirements (Instruments, Minimum channels, Trip Setpoints, and required Actions) to the TSUP nomenclature and requirements (Functional Units, Minimum channels, Applicable Operational Modes, Trip Setpoints, and required Actions). Additional information is provided in Comparison Matrix A-2 (a comparison of CTS and TSUP Action Statements), Comparison Matrix A-3 (a comparison of new isolation functional unit requirements to the associated BWR-STS functional unit requirements), and Comparison Matrix A-4 (a comparison of the CTS table notation to the TSUP table notation). The requirements in the TSUP Table are consistent with the Dresden and Quad Cities CTS table requirements, except as described below.

1. The CTS nomenclature for the various Primary Containment Isolation instruments have been revised to incorporate the BWR-STS nomenclature, as modified by plant-specific design and nomenclature. The proposed change is administrative in nature and does not represent a relaxation of the CTS.

2. The CTS tables do not specify the applicable Operational Mode for each instrument (TSUP Functional Unit). The CTS applicability is defined in the CTS LCO, "When primary containment integrity is required, the limiting conditions of operation for the instrumentation that initiates primary containment isolation are given in Table 3.2.1 (3.2-1 for Quad Cities CTS). As defined in CTS 3.7.A.2, Primary Containment integrity is required "at all times when the reactor is critical or when the reactor water temperature is above 212° F and fuel is in the vessel except while performing low power physics tests at atmospheric pressure at power levels not to exceed 5 MWt. This CTS applicability represents Mode 1 (Run), Mode 2 (Startup/Hot Standby), and Mode 3 (Hot Shutdown). The TSUP applicability is specified for each individual protective instrument in TSUP Table 3.2.A-1, column 4. This format is consistent with BWR-STS format, and represents an administrative change. The proposed change is not a relaxation of CTS. As tabulated in Comparison Matrix A-1, the proposed applicability for each CTS protective instrument is equivalent to the CTS requirement (Modes 1, 2, and 3) except as noted below:

   i. The TSUP applicability for items 1.a, 2.a, and 4.b - "Reactor Vessel Level - Low" includes the footnote "*" (i.e. 1, 2, 3, and *). This TSUP footnote partially incorporates the same BWR-STS note, and requires applicability during core alterations or operations with a potential for draining the reactor vessel. This is an enhancement of the CTS and is more conservative than the CTS.

   ii. The CTS applicability for the "Low Pressure Main Steamline" protective instrument is modified by Dresden CTS Table 3.2.A-1, note 1, and Quad Cities CTS note 2. This note modifies column 1 of the CTS table, and states "When primary containment integrity is required, there shall be two operable or tripped trip systems for each function, except for low pressure main steamline which only need be available in the RUN position." This

note has been incorporated into TSUP 3.2.A, Actions 2 and 3 (which specify the required actions when the number of operable channels in either one or two trip systems is less than the minimum required channels), and TSUP Table 3.2.A-1, column 4, item 3.c [which defines the applicability for MSL Pressure - Low as Operational Mode 1 (Run mode)]. This proposed applicability is equivalent to the CTS applicability, as modified by the site-specific CTS table note. The proposed applicability is not a relaxation of the CTS.

3. Quad Cities CTS Table 3.2-1, column 1 specifies the "Minimum Number of Operable or Tripped Instrument Channels." This has been incorporated into TSUP Table 3.2.A-1, column 3, as the "Minimum Channels per Trip System." This is consistent with the Dresden CTS and BWR-STS format. The number of required channels specified in the Quad Cities CTS have been revised to reflect this revised format (see Comparison Matrix A-1). The proposed change to the format of the Quad Cities CTS table represents a more clear and unambiguous description of the minimum channel requirement. As such, the proposed change is administrative in nature and does not represent a relaxation of the CTS. The instrument specific requirements for the minimum operable channels which have been proposed in TSUP are equivalent to the CTS requirement, except as described below:

   i. The Dresden CTS Minimum Channels per Trip System requirement for "High Flow Main Steam Line specifies "2," as modified by Dresden CTS table note (2), which states "per each steamline." The Quad Cities CTS requirement specifies 16 total channels (8 per trip system). The TSUP requirement (TSUP item 3.d, "MSL Flow - High") specifies 2 channels per steamline. The proposed requirement incorporates and enhances the Dresden CTS nomenclature [including Dresden CTS note (2)], and provides a more accurate description of the logic requirements, since the MSL flow must be measured in each of the four main steam lines, by line-specific channels. The proposed change is not a relaxation of the CTS.

   ii. The Dresden CTS Minimum Channels per Trip System requirement for "High Temperature Main Steam Line Tunnel specifies "2 of 4 in each of 4 sets." The Quad Cities CTS requirement specifies 16 total channels (8 per trip system). The Dresden TSUP requirement (TSUP item 3.d, "MSL Tunnel Temperature - High") specifies 4 channels per trip system. The Quad Cities TSUP requirement (TSUP item 3.d, "MSL Tunnel Temperature - High") specifies 8 channels per trip system. Upon further review, ComEd has determined that the proposed minimum operable channel requirement (per Trip System) does not adequately address the instrumentation logic for the trip function. The TSUP minimum operable channel requirement (per Trip System) should be "2 of 4 in each of 2 sets." This will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal.

   The MSL Tunnel temperature instrumentation uses 16 temperature channels, in four strings of four channels. Two trip strings make up each trip system and both trip systems must trip to cause an MSL isolation. Each trip string has four inputs, any one of which will trip the trip string. The trip strings are arranged in a one-out-of-two taken twice logic. This is effectively a one-out-of-eight taken twice logic arrangement to initiate isolation of the MSIVs.

   Based upon this design of instrumentation logic (four inputs per instrument string, any one of which will trip the trip string), the minimum number of operable channels for each string of channels should be two, in order to ensure that the design function will be met under postulated accident conditions, with a single failure. The minimum number of

operable channels per Trip System should be at least 4 (2 channels per string and two strings per trip system. Therefore, the TSUP minimum channel requirements (per Trip System) for Dresden and Quad Cities (4 and 8 respectively) do not represent a significant reduction in the level of safety.

iii. The Dresden CTS Minimum Channels per Trip System requirement for "High Temperature HPCI Steamline Area specifies 4 channels per trip system. The TSUP requirement (TSUP item 6.d, "HPCI Area Temperature - High") specifies 8 channels per trip system. The proposed requirement accurately reflects the instrumentation logic at Dresden, and is more conservative than the Dresden CTS requirement.

4. Dresden CTS Table 3.2.1 and Quad Cities CTS Table 3.2-1, column 3, specify the trip level setting for each isolation instrument. These trip level settings have been incorporated into TSUP Table 3.2.A-1, column 2, and are consistent with the intent of BWR-STS Table 3.3.2-2, column 3, "Allowable Values." The proposed TSUP does not include separate Trip Setpoint table. The incorporation of the "Allowable Value" column requirements as Trip Setpoints is discussed in item D. (Instrumentation Trip Setpoints) above. The proposed TSUP Trip Setpoints are equivalent to the CTS Trip Level Settings, except as described below:

   i. The CTS Trip Level Setting for " Reactor Low Water Level" ($\geq$ 144" above the top of active fuel) has been revised to "$\geq$ 144" above the top of active fuel." This proposed change establishes consistency with BWR-STS, the current Reactor Protection System Trip Level Setting, and the proposed Reactor Protection System Trip Setpoint (TSUP Table 2.2.A-1). This deviation from the CTS setpoint does not significantly decrease the level of safety.

   ii. The Dresden CTS Trip Level Setting for "Low Pressure Main Steamline" ($\geq$ 850 psig) has been revised to the value specified in the Quad Cities CTS and TSUP ($\geq$ 825 psig). This proposed change is consistent with the information provided by ComEd to support Amendments 66/60 to the Quad Cities Station Technical Specifications. A copy of the NRC Safety Evaluation for Amendments 66/60 is provided as Attachment 1.

   iii. The Dresden TSUP Functional Unit requirement for "HPCI Reactor Vessel Pressure - Low" is an addition to the Dresden CTS, and is consistent with the Quad Cities CTS and TSUP requirement. The Dresden TSUP Trip Setpoint value of $\leq$ 80 psig (which is different, and more conservative than the Quad Cities CTS and TSUP setpoint of $\leq$ 100 psig) is consistent with the Dresden HPCI system design. The addition of the "HPCI Reactor Vessel Pressure - Low" Functional Unit (including the associated setpoints and requirements, is more conservative than the CTS.

5. Dresden CTS Table 3.2.1 and Quad Cities CTS Table 3.2-1 specify the appropriate action requirements as part of the table notes. These have been relocated and revised, consistent with the format and content of BWR-STS Table 3.3.2-1 Actions. Comparison Matrix A-2 provides a comparison of CTS and TSUP Action Statements for each CTS instrument. The proposed TSUP Actions are equivalent to the CTS Actions, except as described below:

   i. The Dresden and Quad Cities CTS specify required Action A for the Primary Containment Isolation function associated with the "Reactor Low Water Level" instrument and the "High Drywell Pressure" instrument. This CTS action requires the initiation of a

shutdown, in order to reach Cold Shutdown in 24 hours. This action for these CTS instruments has been replaced by TSUP Action 20 for the associated TSUP Functional Units (TSUP item 1.a, "Reactor Vessel Water Level - Low" and TSUP item 1.b, "Drywell Pressure - High"). TSUP Action 20 requires that the reactor be in Hot Shutdown within 12 hours, and Cold Shutdown in the next 24 hours. The proposed action is consistent with BWR-STS requirements. The proposed Action is a relaxation of the CTS, however, the proposed change does not represent a significant reduction in safety. The extended period to shutdown the reactor is consistent with industry-accepted and NRC-approved requirements (BWR-STS) and allows for a more orderly reactor shutdown, thus reducing the probability of transients and reactivity management events due to the reactor shutdown.

ii. Dresden and Quad Cities TSUP specifies Action 24 for the Secondary Containment Isolation function associated with TSUP Functional Unit 2.a, "Reactor Vessel Water Level - Low" (CTS instrument "Reactor Low Water Level") and TSUP Functional Unit 2.b, "Drywell Pressure - High" (CTS instrument "High Drywell Pressure"). This additional action for the CTS instruments is consistent with BWR-STS action requirements, and provides explicit action requirements for the secondary containment isolation function. The proposed action requires the sites to establish Secondary Containment integrity (with the Standby Gas Treatment system operating) within one hour. This additional requirement enhances the CTS action A, and provides for additional precautions. The proposed change is not a relaxation of CTS.

iii. Dresden and Quad Cities TSUP specifies Action 23 for the Reactor Water Cleanup (RWCU) System Isolation function associated with TSUP Functional Unit 4.a, "Reactor Vessel Water Level - Low" (CTS instrument "Reactor Low Water Level"). This additional action for the CTS instrument is consistent with BWR-STS action requirements, and provides explicit action requirements for the RWCU System Isolation function. The proposed action requires the sites to close all affected valves in 1 hour, and declare the system (RWCU) inoperable. This additional requirement enhances the CTS action A, and provides for additional precautions. The proposed change is not a relaxation of CTS.

iv. Dresden and Quad Cities CTS specify required Action A for the Primary Containment Isolation function associated with the "Reactor Low Low Water Level" instrument. This CTS action requires the initiation of an orderly shutdown, in order to reach Cold Shutdown in 24 hours. This action for this CTS instrument has been replaced by TSUP Action 21 for the associated TSUP Functional Unit (TSUP item 3.a - Main Steam Line Isolation, "Reactor Vessel Water Level - Low Low"). TSUP Action 21 requires that the reactor be in Startup, with the associated isolation valves closed in 8 hours, or be in at least Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours. The proposed action is consistent with BWR-STS requirements, with the exception that BWR-STS requires 6 hours to be in Startup with the associated isolation valves closed.

The proposed Action represents a modification of BWR-STS Action 21. The proposed action requires that the reactor be in startup (with the associated isolation valves closed) within 8 hours, as opposed to the BWR-STS requirement of 6 hours. The CTS value is consistent with the normal operating practice at Dresden and Quad Cities and allows for a more controlled reactor shutdown, thus reducing the probability of transients and reactivity management events during the reactor shutdown. The proposed modification of BWR-STS requirements does not represent a significant reduction in safety.

The proposed Action provides operational flexibility to the CTS Main Steam Line Isolation requirements. The two-part proposed action allows for the reduction of power to the point that the Main Steam Line Isolation Valves (MSIVs) can be closed, thus eliminating the applicability of the instrument with respect to MSL isolation. The second part of the proposed action (Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours) is a relaxation of the CTS, however, the proposed change does not represent a significant reduction in safety. The extended period to shutdown the reactor is consistent with industry-accepted and NRC-approved requirements (BWR-STS) and allows for a more orderly reactor shutdown, thus reducing the probability of transients and reactivity management events due to the reactor shutdown.

v. The Dresden and Quad Cities CTS specify required Action B for the Primary Containment Isolation function associated with the "High Flow Main Steam Line" instrument, the High Temperature Main Steamline Tunnel" instrument, and the "High Radiation Main Steamline Tunnel" instrument. This CTS action requires the initiation of an orderly load reduction, with the reactor in a Hot Standby condition within 8 hours. This action for these CTS instruments has been replaced by TSUP Action 21 for the associated TSUP Functional Units (TSUP item 3.d, "MSL Flow - High," TSUP item 3.e, "MSL Tunnel Temperature - High," TSUP item 3.b, "MSL Tunnel Radiation - High"). TSUP Action 21 requires that the reactor be in Startup, with the associated isolation valves closed in 8 hours, or be in at least Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours. The proposed action is consistent with BWR-STS requirements, with the exception that BWR-STS requires 6 hours to be in Startup with the associated isolation valves closed.

The proposed Action represents a modification of BWR-STS Action 21. The proposed action requires that the reactor be in startup (with the associated isolation valves closed) within 8 hours, as opposed to the BWR-STS requirement of 6 hours. The CTS value is consistent with the normal operating practice at Dresden and Quad Cities and allows for a more controlled reactor shutdown, thus reducing the probability of transients and reactivity management events during the reactor shutdown. The proposed modification of BWR-STS requirements does not represent a significant reduction in safety.
The proposed Action provides operational flexibility and enhanced requirements to the CTS requirements for the associated instruments. The two-part proposed action allows the stations to reduce power to the point that the Main Steam Line Isolation Valves (MSIVs) can be closed, thus eliminating the applicability of the instrument with respect to MSL isolation. This first part is an enhancement of the CTS Action B, in that the proposed action also requires that the associated isolation valves be closed. This is more conservative than the CTS action requirement. The second part of the proposed action (Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours) is an additional requirement, and enhances the CTS action requirement.

vi. The Dresden and Quad Cities CTS specify required Action C for the Primary Containment Isolation function associated with the Isolation Condenser System (Dresden) and RCIC System (Quad Cities). This has been replaced by TSUP Action 23. The proposed action enhances the CTS action by specifying a time limit for completion of the required action (one hour), and requiring that the associated system be declared inoperable.

vii. The Dresden and Quad Cities CTS specify required Action D for the Primary Containment Isolation function associated with the HPCI System. This has been replaced

by TSUP Action 23. The proposed action enhances the CTS action by specifying a time limit for completion of the required action (one hour), and requiring that the associated system be declared inoperable.

6. Dresden and Quad Cities TSUP Table 3.2.A-1 provides additional isolation instrumentation requirements relative to the CTS tables. These requirements include additional Functional Units for Primary Containment isolation (Drywell Radiation - High), Secondary Containment isolation (Reactor Building Ventilation Exhaust Radiation - High and Refueling Floor Radiation - High), RWCU isolation (Standby Liquid Control System Initiation), and RCIC system isolation (Reactor Vessel Pressure - Low). TSUP Table 3.2.A-1 also provides isolation instrumentation requirements for the Shutdown Cooling system (Dresden) and RHR Shutdown Cooling Mode (Quad Cities). Comparison Matrix A-3 provides a tabular description of these additional requirements, including: applicable modes, minimum channels, and required actions.

   The additional instrumentation requirements for Primary Containment, RWCU, RCIC (Quad Cities), Shutdown Cooling (Dresden), and RHR Shutdown Cooling Mode (Quad Cities) isolation are an enhancement to the CTS, and provide an additional level of safety. As such, the additional requirements are not a relaxation of the CTS. The additional requirements are consistent with BWR-STS requirements, except as tabulated in Comparison Matrix A-3, and described below.

   i. The TSUP Table 3.2.A-1 instrumentation requirements for the Refueling Floor Radiation - High function (Secondary Containment isolation) represent a relocation of CTS requirements to TSUP Table 3.2.A-1. The relocation of instrumentation requirements for the Refueling Floor Radiation monitors is described in item B.4 above.

      The proposed changes are consistent with BWR-STS with the exception that the BWR-STS applicability note "*" has been split into two notes, "*" and "**." The two notes permit each station to remove from service the secondary containment isolation function associated with reactor vessel low water level during certain operational configurations. These configurations include reactor vessel and recirculation piping maintenance periods when the reactor vessel has been defueled and the fuel pool gates are closed. This is consistent with NUREG 1433, and is necessary to support vessel and piping maintenance and inspections. The BWR-STS applicability note "**" was not adopted in TSUP. The BWR-STS Functional Unit to which it applies is not applicable to the plant-specific design.

   ii. The TSUP Table 3.2.A-1 instrumentation requirements for the Reactor Building Ventilation Exhaust Radiation - High function (Secondary Containment isolation) represent a relocation and enhancement of Quad Cities CTS 3.2.F (Control Room Ventilation System isolation), and an addition to the Dresden CTS. The Quad Cities CTS 3.2.F specify requirements for the Reactor Building Ventilation Exhaust Radiation - High isolation instrumentation, as it applies to Control Room Ventilation System isolation. The proposed requirement delineates specific applicability of the instrumentation to Secondary Containment isolation. This is an enhancement of the Quad Cities CTS and represents a more clear and unambiguous delineation of requirements for isolation actuation instrumentation. The proposed requirements are an addition to the Dresden CTS, and as such represent an additional level of safety. The proposed change is not a relaxation of the CTS.

      The proposed changes are consistent with BWR-STS with the exception that the BWR-STS

applicability note "*" has been split into two notes, "*" and "**." The two notes permit each station to remove from service the secondary containment isolation function associated with reactor vessel low water level during certain operational configurations. These configurations include reactor vessel and recirculation piping maintenance periods when the reactor vessel has been defueled and the fuel pool gates are closed. This is consistent with NUREG 1433, and is necessary to support vessel and piping maintenance and inspections. The BWR-STS applicability note "**" was not adopted in TSUP. The BWR-STS Functional Unit to which it applies is not applicable to the plant-specific design.

iii. The TSUP Table 3.2.A-1 instrumentation requirements for Shutdown Cooling (Dresden), and RHR Shutdown Cooling Mode (Quad Cities) isolation are consistent with NUREG-1433 versus BWR-STS, Revision 4. BWR-STS, Revision 4 contains requirements that are inconsistent with mitigating an inadvertent drain-down event during operational modes 1, 2, and 3 (the BWR-STS Applicable Operational Conditions for the Reactor Vessel Water Level - Low function). Isolation in Operational Mode(s) 1, 2 and 3 is provided by the Recirculation Line Water Temperature - High, Cut-in Permissive (Dresden) and Reactor Vessel Pressure - High, Cut-in Permissive (Quad Cities). The reactor vessel water level-low function is designed to prevent an inadvertent drain-down event of the reactor vessel during SDC operations and therefore Operational Mode(s) 3, 4, and 5 are more appropriate. SDC is a separate system for Dresden Station; however, Shutdown Cooling is a mode of the RHR system at Quad Cities Station. The proposed TSUP Action (Action 23) represents an enhancement of the TSUP Action 27. The enhanced Action is consistent with requirements at Limerick Station, and eliminates the unnecessary administrative requirement for locking the valves.

7. Dresden CTS Table 3.2.1 and Quad Cities CTS Table 3.2-1 modify various requirements with table notes. These table notes have been relocated and revised, consistent with the format and content of BWR-STS Table 3.3.2-1 table notes and the plant-specific design. Comparison Matrix A-4 provides a comparison of CTS and TSUP table notes. The proposed TSUP table notes are equivalent to the CTS notes, except as described below:

   i. The action requirements of Dresden and Quad Cities CTS table note 1 has been relocated and incorporated into TSUP 3.2.A Actions 2 and 3, and TSUP Table 3.2.A-1, column 4, item 3.c. The CTS note requires that when primary containment integrity is required, there are two operable or tripped systems for each function. This has been incorporated into TSUP LCO Actions 2 and 3. This relocation represents a more clear and unambiguous delineation of requirements for isolation actuation instrumentation. The proposed change is not a relaxation of the CTS.

   The CTS note also states that this requirement is only applicable in the RUN mode for the low pressure main steamline function. This has been incorporated into the applicable mode column (column 4) of TSUP Table 3.2.A-1 for the TSUP "MSL Pressure - Low" function. This is described in item J.2.ii above.

   ii. Dresden CTS note 2 has been relocated to TSUP Table 3.2.A-1, column 3, item 3.d. This is described in item J.3.i above.

   iii. Dresden CTS note 3 and Quad Cities CTS note 2 have been relocated to TSUP 3.2.A, Actions 2 and 3, and TSUP Table 3.2.A-1, Actions. The CTS note describes the requirements when the number of operable channels per trip system for each trip system,

and both trip systems cannot be met. This has been incorporated into the TSUP LCO and TSUP Table Action statements, consistent with the format and content of BWR-STS. The applicable action for one trip system is relocated to LCO Action 2, while the actions for both trip systems (including CTS sub-notes A, B, C, and D) are relocated to LCO Action 3 and the table actions. The relocation of the CTS sub-notes to the TSUP Table Action statements is described in item 5 above.

This relocation of action requirements represents a more clear and unambiguous delineation of requirements for isolation actuation instrumentation. The proposed change is not a relaxation of the CTS.

iv. Dresden CTS note 4 and Quad Cities CTS note 3 has been relocated to TSUP Table 3.2.A-1, note (d). This relocation is administrative, and not a relaxation of the CTS.

v. Dresden CTS note 5 has been deleted in TSUP Table 3.2.A-1. The CTS note provides an unnecessary relaxation of the "High Drywell Pressure" protective function requirements during purging of the primary containment. The proposed deletion is not a relaxation of the CTS.

vi. Dresden CTS note 6 has been deleted in TSUP table 3.2.A-1. The CTS note specifies an administrative requirement for an anticipatory alarm associated with the "High Radiation Main Steamline Tunnel" function. This anticipatory alarm is an example of an administrative requirement better suited for owner-controlled documents (i.e. UFSAR and/or station procedures). The deletion of the CTS note is an administrative change , and is not a relaxation of the CTS.

vii. Dresden CTS note 7 has been relocated to TSUP Table 3.2.A-1, notes (g) [Dresden] and (h) [Quad Cities], and TSUP Table 2.2.A-1, note (b) [Dresden only]. The CTS notes provide necessary clarification for the "High Radiation Main Steamline Tunnel" function with respect to operation with Hydrogen Water Chemistry (Hydrogen Addition) for Dresden Unit 2 and Quad Cities Units 1 and 2. The referenced TSUP notes provide the equivalent information contained in the CTS notes. The relocation of the CTS notes is administrative, and not a relaxation of the CTS.

viii. Dresden note 8 and Quad Cities note 7 have been relocated and incorporated into TSUP Table 3.2.A-1, note (h) [Dresden] and note (i) [Quad Cities]. The CTS note modifies the setpoint for the high flow isolation function for the HPCI (Dresden and Quad Cities) and RCIC (Quad Cities) systems. The CTS note states that the setpoint includes a time delay of 3 to 9 seconds. The proposed TSUP Table 3.2.A-1 note (h) [Dresden] and note (i) [Quad Cities] are consistent with the CTS notes, and the intent of the LCO table.

This proposed note partially implements the intent of Dresden CTS note 8 (as well as the companion note in Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1), which states that the time delay setting shall be verified each refueling outage. This requirement was not retained in the proposed TSUP Table 3.3.A-1 or 4.2.A-1. The verification requirement was added to the CTS by Amendments 78/69 for Dresden and 88/83 for Quad Cities. The verification requirement was added to the CTS in response to Item 9 of Generic Letter 83-02, "NUREG-0737 Technical Specifications." GL 83-02 stated that "The plants which don't have isolation system response time in their Technical Specifications, should include the setpoint and the surveillance requirements on the time delay relay in

the TSs." Neither Dresden or Quad Cities CTS included a response time section, the setpoint and surveillance was added as a footnote to both the LCO and surveillance tables.

The BWR-STS requirements for response time surveillance requirements have not been incorporated into TSUP. The NRC has approved the relocation of selected Response Time Testing requirements from the TS to owner controlled documents (i.e.UFSAR and/or owner controlled documents). The NRC has approved (by SER dated December 28, 1994 for Licensing Topical Report NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements") and recommended (Generic Letter (GL) 93-08, "Relocation of Technical Specification Tables of Instrument Response Time Limits") the relocation of selected Response Time Testing requirements from the TS to the FSAR. Based upon current requirements, the NRC SER, and GL 93-08, the current licensing basis is maintained, and the TSUP provisions do not represent a relaxation of the CTS.

ix. Quad Cities CTS note 4 has been relocated to TSUP Table 3.2.A-1, column 4, item 3.c. The CTS note states that the modified isolation trip signal is bypassed in certain modes. This design information has been incorporated into the applicable mode column. This is an administrative change, and not a relaxation of the CTS.

x. Quad Cities CTS note 5 has been relocated and incorporated into Quad Cities TSUP Table 3.2.A-1, note (k). This is an administrative change, and not a relaxation of the CTS.

xi. Quad Cities CTS note 6 has been relocated and incorporated into TSUP Table 3.2.A-1, note (b) for both Dresden and Quad Cities. This is an administrative change, and not a relaxation of the CTS.

xii. Dresden and Quad Cities TSUP Table 3.2.A-1 includes notes "*" and "**." These proposed changes are consistent with BWR-STS with the exception that the BWR-STS applicability note "*" has been split into two notes, "*" and "**." The two notes permit each station to remove from service the secondary containment isolation function associated with reactor vessel low water level during certain operational configurations. These configurations include reactor vessel and recirculation piping maintenance periods when the reactor vessel has been defueled and the fuel pool gates are closed. This is consistent with NUREG 1433, and is necessary to support vessel and piping maintenance and inspections. The BWR-STS applicability note "**" was not adopted in TSUP. The BWR-STS Functional Unit to which it applies is not applicable to the plant-specific design.

xiii. Dresden and Quad Cities TSUP Table 3.2.A-1 includes note (a). This proposed table note is based upon BWR-STS Table 3.3.2-1, note (a). The proposed note modifies the minimum channel requirement column by stating that a channel may be inoperable for up to 2 hours for required surveillance without placing the trip system in the tripped condition. The proposed note enhances the BWR-STS note by specifying that the relaxation described above can only be implemented if the Functional Unit maintains isolation capability. This deviation from BWR-STS does not represent a reduction in safety.

xiv. Dresden and Quad Cities TSUP Table 3.2.A-1 includes note (c). This proposed table note is based upon BWR-STS Table 3.3.2-1, note (c). The proposed note modifies Secondary Containment isolation Functional Units, and states that the signal isolates Reactor Building Ventilation and actuates the Standby Gas Treatment system. The information pertaining to isolation of Reactor Building Ventilation is an addition to the BWR-STS note. This

deviation from BWR-STS enhances the intent of the note, and does not represent a reduction in safety.

xv. Dresden and Quad Cities TSUP Table 3.2.A-1 includes note (e). The proposed note modifies the minimum channel requirements for Quad Cities TSUP Table 3.2.A-1, item 5.b, "Reactor Vessel Pressure - Low" (RCIC system isolation), and Dresden TSUP Table 3.2.A-1, item 7.b, "Recirculation Line Water Temperature - High (Cut-in Permissive) (Shutdown Cooling system isolation). The proposed note provides clarifying information that the existing design does not include the normal two trip systems for the Functional Units. This deviation from BWR-STS enhances the intent of TSUP, and does not represent a reduction in safety.

xvi. Dresden and Quad Cities TSUP Table 3.2.A-1 includes note (f). This proposed table note is equivalent to BWR-STS Table 3.3.2-1, note (f). The proposed note modifies the Functional Unit description for the "Standby Liquid Control System - Initiation" function (RWCU system isolation).

K. Dresden CTS Table 3.2.2 and Quad Cities CTS Table 3.2-2

Dresden CTS Table 3.2.2 and Quad Cities CTS Table 3.2-2 delineate the required instrumentation, minimum channel requirements, trip level settings, and action requirements for the Core and Containment Cooling systems, including instrumentation for actuation of the Core Spray, Low Pressure Coolant Injection (LPCI), HPCI, Automatic Depressurization (ADS), Isolation Condenser (Dresden only), and Loss of Power systems. These CTS requirements have been incorporated into TSUP Table 3.2.B-1, "Emergency Core Cooling Systems Actuation Instrumentation" (ECCS Actuation Instrumentation), Dresden TSUP Table 3.2.D-1, "Isolation Condenser Actuation Instrumentation," and TSUP Table 3.2.I-1, "Suppression Chamber and Drywell Spray Actuation Instrumentation."

TSUP Table 3.2.B-1 has explicitly defined, in separate sections, the instrumentation requirements for the ECCS actuation instrumentation. Dresden TSUP Table 3.2.D-1 has explicitly defined the instrumentation requirements for Isolation Condenser actuation instrumentation. TSUP Table 3.2.I-1 has explicitly defined the instrumentation requirements for Suppression Chamber and Drywell Spray actuation instrumentation. This proposed format is an enhancement to the CTS tables, which are organized by Trip Function (i.e. Reactor Low Low Water Level), with a clarifying column defining the systems initiated by the trip function. The proposed format is consistent with BWR-STS format, and represents a more clear and unambiguous delineation of requirements for ECCS Actuation Instrumentation. The modified format does not represent a relaxation of CTS.

The attached Comparison Matrix B-1 provides a tabular comparison of the CTS table nomenclature and requirements (Instruments, Minimum channels, and Trip Setpoints) to the TSUP nomenclature and requirements (Functional Units, Minimum channels, Applicable Operational Modes, and Trip Setpoints). Additional information is provided in Comparison Matrix B-2 (a comparison of CTS and TSUP Action Statements), Comparison Matrix B-3 (a comparison of new functional unit requirements to the associated BWR-STS functional unit requirements), and Comparison Matrix B-4 (a comparison of the CTS table notation to the TSUP table notation). The requirements in the TSUP Tables are consistent with the Dresden and Quad Cities CTS requirements, except as described below.

1. The CTS nomenclature for the various ECCS Actuation instruments has been revised to

incorporate the BWR-STS nomenclature, as modified by plant-specific design and nomenclature. The proposed change is administrative in nature and does not represent a relaxation of the CTS.

2. The Dresden CTS minimum channel per trip system requirement (Dresden CTS Table 3.2.2, column 1 (and CTS note 1) has been revised to match the Quad Cities and BWR-STS requirement of minimum channels per trip function. The number of required channels for each function defined in the Dresden CTS has been revised to reflect that there are two trip systems (Dresden CTS Table 3.2.2, note 1), with the exception of ADS actuation instrumentation and Loss-of-Power actuation instrumentation. The ADS minimum channel requirement is discussed in item K.3 below. The Loss-of-Power minimum channel requirement is discussed in item K.5 below. The proposed revision of the Dresden minimum channel per trip system requirement is an enhancement of the CTS requirement, and as such, represents a more clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

3. The Dresden and Quad Cities CTS Trip Function requirements for the Automatic Depressurization system (ADS) have been subdivided by TRIP SYSTEM in TSUP Table 3.2.B-1. This format is a deviation from BWR-STS Revision 4 format, and reflects the LaSalle Station TS and NUREG-1433 format. The proposed format is consistent with the design of the system, the CTS requirements, and provides operational flexibility, while maintaining the same level of safety as that provided in the CTS. This consistency in the level of safety is based upon the initiation logic and the minimum channel requirements for the ADS Functional Units in each ADS Trip System.

   The ADS logic in each trip system is arranged in two trip systems. Each trip system has a sensor or device for each of the following variables: Reactor Vessel Water Level - Low Low; Drywell Pressure - High; and low water level Initiation Timer. All contacts in both logic strings must close, the ADS initiation timer must time out, and discharge pressure from any CS or LPCI pump must be adequate to initiate an ADS trip system. Either the A or B trip system will cause all the ADS relief valves to open.

   The logic system described above is incorporated into the TSUP Table 3.2.B-1 ADS minimum channel requirement for the Reactor Vessel Water Level - Low Low and Drywell Pressure - High Functional Units. The required number of channels for these functional units in each ADS Trip System is one half the number of the minimum required for the other ECCS trip functions in both TSUP and CTS (2 versus 4). This same approach is incorporated into the TSUP Table 3.2.B-1 ADS minimum channel requirement for the ADS Initiation Timer and the low pressure ECCS pump discharge pressure permissive function.

   The TSUP Table 3.2.B-1 ADS minimum channel requirement for the ADS Initiation Timer is 1 per ADS trip system. This is equivalent to the CTS requirement of 2 channels per trip function.

   The TSUP Table 3.2.B-1 ADS minimum channel requirement for the low pressure ECCS pump discharge pressure permissive function (Core Spray and LPCI) is 1 per pump for each ADS trip system. This is equivalent to the CTS minimum channel requirement of 4 per trip function for the low pressure core cooling pumps (which includes the Core Spray pumps).

   Since either trip system will initiate ADS, and the proposed minimum channel requirements reflect the proposed format, the proposed change is consistent with, and equivalent to the CTS requirements. Therefore, the proposed format for the ADS actuation instrumentation in TSUP

Table 3.2.B-1 does not represent a relaxation of the CTS

4. The CTS tables do not specify the applicable Operational Mode for each instrument (TSUP Functional Unit). The CTS applicability is defined in the CTS LCO, "This instrumentation must be operable when the system(s) it initiates or controls are required to be operable as specified in Specification 3.5." This CTS applicability depends upon the ECCS system, and varies between the Dresden and Quad Cities CTS. The TSUP applicability is defined by Operational Mode for each ECCS actuation functional unit. This TSUP applicability and the relation to the CTS applicability is described below:

   i. Dresden and Quad Cities CTS specify that the Core Spray and LPCI systems must be operable whenever irradiated fuel is in the reactor vessel. The Quad Cities CTS also state that the systems must be operable prior to startup from a cold condition. The TSUP applicability for the Core Spray and LPCI actuation instrumentation [TSUP Table 3.2.B-1, items 1.a and 2.a (CTS Trip Function - "Reactor Low Low Water Level"); 1.b and 2.b (CTS Trip Function - "High Drywell Pressure"); and 1.c and 2.c (CTS Trip Function - "Reactor Low Pressure)] is specified as Operational Modes 1, 2, 3, 4, and 5. This proposed applicability encompasses the Dresden and Quad Cities CTS applicability, in that the only time when Core Spray and LPCI initiation instrumentation will not be required when all fuel is removed from the vessel (no Operational Mode). This also encompasses the Quad Cities applicability of "prior to startup from a cold condition." The TSUP applicability for the referenced CTS trip functions is not a relaxation of CTS.

   ii. Dresden and Quad Cities CTS specify that the HPCI system and Automatic Depressurization system (ADS) must be operable whenever irradiated fuel is in the reactor vessel, and reactor pressure is greater than 150 psig (HPCI and Dresden ADS) and greater than 90 psig (Quad Cities ADS). The Quad Cities CTS also state that the ADS must be operable prior to startup from a cold condition. The TSUP applicability for the HPCI and ADS actuation instrumentation [TSUP Table 3.2.B-1, items 3.a, 4.a, and 5.a (CTS Trip Function - "Reactor Low Low Water Level"); and, 3.b, 4.b, and 5.b (CTS Trip Function - "High Drywell Pressure")] is specified as Operational Modes 1, 2, and 3. This proposed applicability encompasses the Dresden and Quad Cities CTS applicability, in that reactor pressure cannot exceed 90 psig (Quad Cities ADS CTS applicability) in Operational Modes 4 and 5. Furthermore, the TSUP applicability also encompasses the Quad Cities applicability of "prior to startup from a cold condition," in that the instrumentation will be required prior to placing the mode switch into Startup (Operational Mode 2). While in the Cold Shutdown and Refuel modes (Operational Modes 4 and 5), the reactor status is cold shutdown and the temperature limitations eliminate the possibility of a high pressure condition. The TSUP applicability for the referenced CTS trip functions is not a relaxation of CTS.

   iii. Dresden and Quad Cities CTS specify that the Automatic Depressurization system (ADS) must be operable whenever irradiated fuel is in the reactor vessel, and reactor pressure is greater than 150 psig (Dresden ADS) and greater than 90 psig (Quad Cities ADS). The Quad Cities CTS also state that the ADS must be operable prior to startup from a cold condition.

   The TSUP applicability for the ADS actuation instrumentation for the Auto blowdown timer (TSUP Table 3.2.B-1, items 4.c and 5.c) is specified as Operational Modes 1, 2, and 3. This proposed applicability encompasses the Dresden and Quad Cities CTS

applicability, in that reactor pressure cannot exceed 90 psig (Quad Cities ADS CTS applicability) in Operational Modes 4 and 5. Furthermore, the TSUP applicability also encompasses the Quad Cities applicability of "prior to startup from a cold condition," in that the instrumentation will be required prior to placing the mode switch into Startup (Operational Mode 2). While in the Cold Shutdown and Refuel modes (Operational Modes 4 and 5), the reactor status is cold shutdown and the temperature limitations eliminate the possibility of a high pressure condition. Therefore, the TSUP applicability for the ADS Auto blowdown timer is not a relaxation of CTS.

The TSUP applicability for the ADS actuation instrumentation associated with the LPCI and CS pump discharge pressure (TSUP Table 3.2.B-1, items 4.e, 4.f, 5.e, and 5.f) is specified as Operational Modes 1, 2, and 3. This proposed applicability encompasses the Dresden and Quad Cities CTS applicability, in that reactor pressure cannot exceed 90 psig (Quad Cities ADS CTS applicability) in Operational Modes 4 and 5. Furthermore, the TSUP applicability also encompasses the Quad Cities applicability of "prior to startup from a cold condition," in that the instrumentation will be required prior to placing the mode switch into Startup (Operational Mode 2). While in the Cold Shutdown and Refuel modes (Operational Modes 4 and 5), the reactor status is cold shutdown and the temperature limitations eliminate the possibility of a high pressure condition. The TSUP applicability for the LPCI and CS pump discharge pressure functions is not a relaxation of CTS.

iv. Dresden and Quad Cities CTS specify that the Core Spray and LPCI systems must be operable whenever irradiated fuel is in the reactor vessel. The Quad Cities CTS also state that the systems must be operable prior to startup from a cold condition. The operability of the LPCI and Core Spray system is a function of the "Loss of Power" instrumentation (i.e. the "Loss of Power" instrumentation is a support system for the LPCI and Core Spray systems). Therefore, the CTS applicability of the "Loss of Power" instrumentation is equivalent to the CTS applicability for the LPCI and Core Spray system instrumentation. The TSUP applicability for the "Loss of Power" instrumentation (TSUP Table 3.2.B-1, items 6.a and 6.b) is specified as Operational Modes 1, 2, 3, 4, and 5. This proposed applicability encompasses the Dresden and Quad Cities CTS applicability, in that the only time when "Loss of Power" instrumentation will not be required will be when all fuel is removed from the vessel (no Operational Mode). This also encompasses the Quad Cities applicability of "prior to startup from a cold condition." The TSUP applicability for the referenced CTS trip functions is not a relaxation of CTS.

5. The Dresden CTS Table 3.2.2 specifies a minimum channel requirement per trip system of "2/Bus" for the "Loss of Voltage" and "Degraded Voltage" functions. The Quad Cities CTS Table 3.2-2 specifies a minimum channel requirement per trip function of "2/Bus" for the "Loss of Voltage" and "Degraded Voltage" functions.

   The current instrumentation logic for the "Undervoltage" instrumentation at Dresden and Quad Cities is 2 channels per bus for both the "Loss of Voltage" and "Degraded Voltage" protective functions. Therefore, the TSUP minimum channel requirement per trip function of "2/Bus," accurately reflects the current Dresden and Quad Cities design and safety analyses. The proposed requirements are not a relaxation of CTS.

   In TSUP Table 3.2.B-1, item 6, the BWR-STS columns for Total Number of Channels and Channel(s) to Trip have been deleted. These columns provide only design information which is

inconsistent with the required information for all other functions in the table. This does not represent a reduction in the level of safety provided by the BWR-STS.

6. The Dresden and Quad Cities CTS setpoint for Containment Spray Interlock - 2/3 Core Height (TSUP Table 3.2.I-1, Item 2) has been revised from "2/3 core height" to the value of $\geq$ -48 inches (above the top of active fuel). This setpoint is equivalent to 2/3 core height, and represents a more accurate method of specifying an instrument setpoint. The proposed change is not a relaxation of CTS.

7. The Dresden and Quad Cities CTS minimum channel requirement for LPCI Pump Discharge Pressure has been revised from "4" to the value of "1/pump." The revised value is consistent with the current Dresden and Quad Cities design, given that there are four LPCI pumps. The proposed change is not a relaxation of CTS.

8. The Dresden CTS setpoint for LPCI Pump Discharge Pressure (ADS permissive) has been revised to match the Quad Cities CTS setpoint in TSUP Table 3.2.B-1, items 4.e, 4.f, 5.e, and 5.f. The ECCS discharge pipe keep-filled system operates in the 50 to 100 psig range. Therefore, the setpoints for the ADS permissive should provide sufficient margin above that range to assure the keep-filled system is not actuating the permissive. The Quad Cities setpoints provide that necessary margin, while still ensuring that the protective function is able to meet the design objective. The proposed setpoint revision is not a relaxation of the CTS.

9. The CTS setpoints for the "Loss of Voltage" function have been enhanced to clarify the tolerance and applicability. The tolerance has been changed from a percentage to a numerical voltage, with the clarification that the setpoint and tolerance applies to decreasing voltage. The proposed enhancement represents a more clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

10. The CTS setpoints for the "Degraded Voltage" function have been revised consistent with methodologies submitted in the M. Richter to USNRC letter, dated March 9, 1992 and the W. Morgan to USNRC letter dated September 23, 1993. In addition, the CTS setpoints have been enhanced to clarify setpoint applicability.

    The proposed setpoint values provide a conservative value for the actuation of the protective function for each unit, while minimizing the impact on normal plant operation. The proposed values are more conservative than the CTS values. The proposed setpoint values are not a relaxation of the CTS.

    The proposed setpoints have also incorporated the modifier "greater than or equal to," thus reinforcing the applicability that the setpoint applies to a decreasing voltage condition. The proposed enhancement represents a clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

    The proposed setpoints have relocated the clarifying time delay information (5 min + 5% and 7 second + 20%) to TSUP Table 3.2.B-1, notes (g) and (j). This is an administrative change, and represents a clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

11. The Dresden CTS Table 3.2.2 and Quad Cities CTS Table 3.2-1 Action requirements have been relocated and incorporated into TSUP 3.2.B, Actions 2 and 3, and TSUP Table 3.2.B-1, Actions

30, 31, 32 and 36; TSUP Table 3.2.D-1, Action 40; and TSUP Table 3.2.I-1, Action 80. TSUP Table 3.2.B-1 Actions 33 and 34 provide action requirements for Functional Units not in the CTS. Deviations from BWR-STS requirements for these additional Functional Units are discussed in item K.12 below. Comparison Matrix B-2 provides a comparison of CTS and TSUP Action Statements. The TSUP actions are consistent with CTS and BWR-STS requirements, except as tabulated in Comparison Matrix B-2 and described below:

i. Dresden Table 3.2.2, note 1 requires two operable trip systems, and states that if the minimum channel requirement cannot be met for one trip system, that trip system shall be tripped. The Dresden CTS note also states that if the minimum channel requirement cannot be met for both trip systems, immediately initiate an orderly shutdown to cold conditions. Quad Cities CTS Table 3.2-2, note 1 states that if the minimum channel requirement cannot be met for one or both of the trip systems, the actuated system shall be declared inoperable, and Specifications 3.5 and 3.9 shall govern. It should be noted that the CTS 3.5 actions for inoperability of the Core Spray, LPCI, and Containment Cooling systems require the initiation of an orderly shutdown to the cold condition within 24 hours. For inoperability of HPCI, ADS, and the Dresden Isolation Condenser system, CTS 3.5 requires the initiation of an orderly shutdown and reduction of reactor pressure to less than 150 psig within 24 hours.

   These requirements in the Dresden and Quad Cities CTS table notes have been incorporated into TSUP 3.2.B, Action 2 (with the exception of ADS actuation instrumentation), which states that with one or more channels inoperable (per trip function) take the action required in Table 3.2.B-1. This proposed action reflects the revision of the Dresden CTS Table 3.2.2 minimum channel per trip system requirement (with the exception of ADS actuation instrumentation) to the TSUP minimum channel per trip function requirement (see item K.2 above). This incorporation of the CTS table note into TSUP Action 2 is an enhancement of the CTS, and represents a clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

ii. TSUP 3.2.B, Action 3 provides action requirements for the two ADS Trip Systems. The additional action is a deviation from BWR-STS requirements, and allows an out-of-service time for one trip system of ADS without declaring all of ADS inoperable, and refers to TSUP Table 3.2.B-1 action requirements. This is consistent with the separation of the ADS trip function into two trip systems (see item K.3 above) and is based upon the equivalent LaSalle Station TS action. The separation of the ADS trip function into two trip systems is also reflected in TSUP Table 3.2.B-1, Action 31.a. This deviation from BWR-STS action requirements is an enhancement of the BWR-STS and CTS, and as such, represents a clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

iii. For the CTS trip functions of "Reactor Low Low Water" and "High Drywell Pressure," the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by the TSUP Table 3.2.B-1, Actions 30 (Core Spray, LPCI, and ADS) and 35 (HPCI).

   TSUP Action 30 states that if the minimum channel requirement for one trip system cannot be met, that trip system shall be tripped within one hour, or the associated ECCS system shall be declared inoperable. If the minimum channel requirement cannot be met for both trip systems, the associated ECCS system shall be declared inoperable. This

proposed action is consistent with, and equivalent to, BWR-STS and Dresden CTS requirements. The proposed action does not represent a relaxation of the Dresden CTS. The proposed action represents a deviation from the Quad Cities CTS, in that it does not require a shutdown if only one trip system is inoperable (and if it is tripped), which would be required by the Quad Cities CTS table action and Quad Cities CTS 3.5 requirements. The proposed action provides operational flexibility, without a significant reduction in nuclear safety. When one trip system is placed in the tripped condition, the other trip system is available to actuate the associated ECCS system with a non-coincident logic (i.e. one-out-of-two once), thus providing the same level of safety as two operable trip systems. The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is considered acceptable because it minimizes risk while allowing time for restoration of channels. The proposed change to the Quad Cities CTS does not significantly reduce the margin of safety.

TSUP Action 35 states that if the minimum channel requirement for the trip function cannot be met, at least one channel shall be tripped within one hour, or HPCI shall be declared inoperable. The proposed action is consistent with the intent of the Dresden CTS action, therefore it is not a relaxation of the CTS. The proposed action represents a deviation from the Quad Cities CTS, in that it does not require a shutdown if one or more channels are inoperable (and at least one is tripped), which would be required by the Quad Cities CTS table action and Quad Cities CTS 3.5 requirements. The proposed action provides operational flexibility, without a significant reduction in nuclear safety. When one channel is placed in the tripped condition, the one-out-of-two twice logic has been actuated for one logic train. The other logic train is available to actuate the HPCI system with a non-coincident logic (i.e. one-out-of-two once), thus providing the same level of safety as two operable trip systems (four operable channels). The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is considered acceptable because it minimizes risk while allowing time for restoration of channels. The proposed change to the CTS actions does not reduce the margin of safety.

iv. For the CTS trip function of "Reactor Low Pressure" (low pressure ECCS permissive for Core Spray and LPCI), the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by the TSUP Table 3.2.B-1, Actions 31.b (Operational Modes 1, 2, & 3) and 32 (Operational Modes 4 and 5).

TSUP Action 31.b applies to Operational Modes 1, 2, and 3, and states that if the minimum channel requirement for the trip function cannot be met, the associated ECCS system shall be declared inoperable. This is consistent with the Dresden and Quad Cities CTS actions, in that the CTS would require that the associated ECCS systems be declared inoperable, and an orderly shutdown initiated with one inoperable channel. The proposed action is not a relaxation of the CTS.

TSUP Action 32 applies to Operational Modes 4 and 5, and states that if the minimum channel requirement for the trip function cannot be met, the inoperable channel shall be placed in the tripped condition within one hour. This is a deviation from the CTS, and is more appropriate for the Operational Condition. In Operational Modes 4 and 5, the reactor is already shutdown and in a cold condition, therefore, the appropriate action would be to trip the inoperable channel. This will result in an actuation of the one-out-of -two once logic for the permissive signal, thus ensuring the safety function. The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is

considered acceptable because it minimizes risk while allowing time for restoration of channels. The proposed change to the CTS does not reduce the level of safety.

v. For the CTS trip functions of "2/3 Core Height" and "Containment High Pressure" (Containment Spray Interlock), the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by TSUP Table 3.2.I-1, Action 80.

This action states that if the minimum channel requirement cannot be met for one trip system, place at least one inoperable channel in the tripped condition within one hour, or declare the Containment Sprays (Drywell and Suppression Chamber) inoperable. If the minimum channel requirement cannot be met for both trip systems, the TSUP action requires that the Containment Sprays (Drywell and Suppression Chamber) be declared inoperable. This proposed action is consistent with, and equivalent to, BWR-STS and Dresden CTS requirements.

The proposed action represents a deviation from the Quad Cities CTS, in that it does not require a shutdown if only one trip system is inoperable (and if it is tripped), which would be required by the Quad Cities CTS table action and Quad Cities CTS 3.5 requirements. The proposed action provides operational flexibility, without a significant reduction in nuclear safety. By tripping the inoperable channel, the "2/3 Core Height Interlock" is actuated, or the "Containment High Pressure" one-out-of-two twice logic has been actuated for one logic train. In the latter case, the second logic train is available to actuate the interlock with a non-coincident logic (i.e. one-out-of-two once). This provides the same level of safety as two operable trip systems (four operable channels). The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is considered acceptable because it minimizes risk while allowing time for restoration of channels. The proposed change to the CTS does not reduce the level of safety.

vi. For the CTS trip functions of "Timer Auto Blowdown" and "LPCI Pump Discharge Pressure" (ADS timer and permissive), the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by the TSUP Table 3.2.B-1, Action 31.a (Operational Modes 1, 2, & 3).

TSUP Action 31.a applies to Operational Modes 1, 2, and 3, and states that if the minimum channel requirement for the trip function cannot be met, the associated ADS trip system shall be declared inoperable. This is consistent with the Dresden CTS actions for the individual ADS trip systems in that an inoperable trip system will be tripped. The proposed action represents a deviation from the Quad Cities CTS, in that it does not require a shutdown if only one trip system is inoperable (and if it is tripped), which would be required by the Quad Cities CTS table action and Quad Cities CTS 3.5 requirements. The proposed action provides operational flexibility, without a significant reduction in nuclear safety. When one trip system is placed in the tripped condition, the other trip system is available to actuate the ADS function, therefore, the proposed deviation from the Quad Cities CTS is not a significant reduction in the margin of safety.

vii. For the Dresden CTS trip function of "Sustained High Reactor Pressure" (Isolation Condenser Initiation), the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by the TSUP Table 3.2.D-1, Action 40.

TSUP Table 3.2.D-1, Action 40 states that if the minimum channel requirement cannot be

met for one trip system, place the inoperable channel in the tripped condition within one hour, or declare the Isolation Condenser system inoperable. If the minimum channel requirement cannot be met for both trip systems, the TSUP action requires that the Isolation Condenser system be declared inoperable. This proposed action is consistent with, and equivalent to, BWR-STS and Dresden CTS requirements. The proposed action does not represent a relaxation of the Dresden CTS.

viii. For the CTS trip functions of "Undervoltage on Emergency Buses" and "Degraded Voltage on Emergency Buses," the CTS actions (see K.11.i above for a description of the CTS actions) have been replaced by the TSUP Table 3.2.B-1, Action 36.

TSUP Action 36 states that if the minimum channel requirement for the trip function cannot be met, at least one channel shall be tripped within one hour, or the associated EDG shall be declared inoperable. The proposed action is consistent with the intent of, and enhances the Dresden CTS action and is not a relaxation of the CTS.

The proposed action represents a deviation from the Quad Cities CTS, in that it does not require a shutdown if one or more channels are inoperable (and at least one is tripped), which would be required by the Quad Cities CTS table action and Quad Cities CTS 3.9 requirements. The proposed action provides operational flexibility, without a significant reduction in nuclear safety. When one channel is placed in the tripped condition, the one-out-of-two twice logic has been actuated for one logic train. The other logic train is available to actuate the function with a non-coincident logic (i.e. one-out-of-two once), thus providing the same level of safety. The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is considered acceptable because it minimizes risk while allowing time for restoration of channels. The proposed change to the CTS actions does not reduce the margin of safety.

12. Dresden and Quad Cities TSUP Table 3.2.B-1 provides additional ECCS actuation instrumentation requirements relative to the CTS tables. These requirements include additional actuation instrumentation Functional Units for Core Spray [Core Spray Pump Discharge Flow - Low (Bypass); LPCI [LPCI Pump Discharge Flow - Low (Bypass)]; HPCI (Condensate Storage Tank Level - Low, Suppression Chamber Water Level - High, Reactor Vessel Water Level - High, HPCI Pump Discharge Flow - Low (Bypass), and Manual Initiation), and ADS [Low Low Level Timer, and Core Spray Pump Discharge Pressure - High (Permissive)]. Comparison Matrix B-3 provides a tabular description of these additional requirements, including applicable modes, minimum channels, and required actions.

The additional instrumentation requirements are an enhancement to the CTS, and provide an additional level of safety. As such, the additional requirements are not a relaxation of the CTS. The additional requirements are consistent with BWR-STS requirements, except as tabulated in Comparison Matrix B-3, and described below.

i. The TSUP Table 3.2.B-1 minimum channel requirements for the Core Spray and LPCI Pump Discharge Flow - Low (Bypass) functions (items 1.d and 2.d) are specified as 1 per loop, as opposed to the BWR-STS requirement of 1 per pump. The proposed requirement is consistent with the BWR-STS requirement for the Core Spray actuation instrumentation, since there are only two Core Spray pumps in each of two divisions. The proposed requirement for the LPCI actuation instrumentation reflects the instrumentation logic design at Dresden and Quad Cities for the LPCI system. This is not a significant

reduction in the level of safety provided by BWR-STS.

ii. The TSUP Table 3.2.B-1 Action requirement for HPCI items 3.c (Condensate Storage Tank Level - Low) and 3.d (Suppression Chamber Water Level - High) specifies Action 35, as opposed to BWR-STS Action 36. TSUP Action 35 states that if the minimum channel requirement for the trip function cannot be met, at least one channel shall be tripped within one hour, or HPCI shall be declared inoperable. The proposed action is based upon BWR-STS Action 35, as modified for the plant design, and is equivalent to BWR-STS Action 36.

iii. The Dresden TSUP Table 3.2.B-1 minimum channel requirement for HPCI item 3.e (Reactor Vessel Water Level - High Trip) is specified as one, versus the BWR-STS requirement of 2. This incorporates the instrumentation logic design at Dresden. This is not a significant reduction in the level of safety provided by BWR-STS.

iv. The TSUP Table 3.2.B-1 ADS actuation instrumentation Functional Units for items 4.d and 5.d (Low Low Level Timer) is proposed as an alternative to the BWR-STS Functional Unit 4.f [Reactor Vessel Water Level - Low, Level 3, Permissive)]. The "Low Low Level Timer" function is designed to provide the same confirmatory function as the BWR-STS Reactor Vessel Water Level - Low, Level 3, permissive. These requirements are consistent with the current safety analyses in place at Dresden and Quad Cities Station.

v. The TSUP Table 3.2.B-1 minimum channel requirements for ADS items 4.e and 5.e (Core Spray Pump Discharge Pressure - High (Permissive) are specified as 1 per pump, as opposed to the BWR-STS requirement of 1 per loop. The proposed requirement is consistent with the current licensing basis, since there are only two Core Spray pumps in each of two divisions.

13. Dresden CTS Table 3.2.2 and Quad Cities CTS Table 3.2-2 modify various requirements with table notes. These table notes have been relocated and revised, consistent with the format and content of BWR-STS Table 3.3.3-1 table notes and the plant-specific design. Comparison Matrix B-4 provides a comparison of CTS and TSUP table notes. The proposed TSUP table notes are equivalent to the CTS notes, except as described below:

i. Dresden and Quad Cities CTS table note 1 has been relocated and incorporated into TSUP 3.2.B Action 2 and TSUP Table 3.2.B-1, Actions 30 through 36. This relocation is discussed in item K.11.i above.

ii. Dresden and Quad Cities CTS note 2 has been relocated to TSUP Table 3.2.B-1, note (f). This relocation is administrative, and not a relaxation of CTS.

iii. Dresden CTS note 3 has been deleted from TSUP. The CTS note modifies the "High Drywell Pressure" Trip Function, and states that the function "May be bypassed when necessary during purging for containment inerting and deinerting." The Dresden CTS note allows a relaxation of ECCS actuation requirements. This note is unnecessary and nonconservative, relative to the BWR-STS. The deletion of Dresden CTS note 3 does not represent a relaxation of any CTS requirement.

iv. Dresden CTS note 4 and Quad Cities CTS note 3 have been relocated to TSUP Table 3.2.I-1, note (b). This relocation is administrative, and not a relaxation of CTS.

v. Dresden CTS note 5 has been relocated to TSUP Table 3.2.B-1, note (h) for both Dresden and Quad Cities. This relocation is administrative, and not a relaxation of CTS.

vi. Dresden CTS note "*" has been deleted from TSUP. The CTS note modifies the column 3 information pertaining to the LPCI and CS pump discharge pressure permissive function. The Dresden CTS note provides design information which is more appropriate for plant administrative controls (i.e. procedures and UFSAR). The deletion of the Dresden CTS note is not a relaxation of any CTS requirement.

vii. Quad Cities CTS note 4 has been deleted from TSUP. The CTS note modifies the minimum channel requirement for the High Drywell Pressure function. The Quad Cities CTS note provides design information which is more appropriate for plant administrative controls (i.e. procedures and UFSAR). The deletion of the CTS note is not a relaxation of any CTS requirement.

viii. Quad Cities CTS note 5 has been deleted from TSUP. The CTS note modifies the minimum channel requirement for the Undervoltage and Degraded Voltage functions. The Quad Cities CTS note is equivalent to BWR-STS Table 3.3.3-1, Action 38 for the "4.16 kV Emergency Bus Undervoltage (Degraded Voltage) function." This action provides a clarification of the CTS minimum channel requirement. This note is unnecessary. The deletion of the Quad Cities CTS note 5 does not represent a relaxation of any CTS requirement.

ix. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (a). The proposed note modifies the minimum channel requirement column, and is consistent with the intent of BWR-STS note (a). The proposed note states that a channel may be placed in an inoperable condition for up to 2 hours for required surveillance without placing the channel in a tripped condition, provided the Functional Unit maintains actuation capability. This additional note provides necessary operational flexibility in order to perform required surveillances, without entering the Action statement for the supported ECCS system or tripping the instrument channel. This avoids the potential risk associated with tripping an instrument channel, including spurious actuation signals and/or challenges to plant equipment. The proposed note is an enhancement to the CTS.

x. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (b). The proposed note modifies the Core Spray "Reactor Vessel Water Level - Low Low" and "Drywell Pressure - High" Functional Units, and is consistent with BWR-STS note (b). The proposed note provides clarifying information related to the Functional Units, and as such is an administrative enhancement of the CTS.

xi. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (c). The proposed note is equivalent to BWR-STS note *, which modifies the applicability in Operational Modes 4 and 5 for the Core Spray and LPCI "Reactor Vessel Water Level - Low Low," "Reactor Vessel Pressure - Low (Permissive)," and the CS/LPCI Pump Discharge Flow - Low (Bypass)" Functional Units. The proposed note clarifies the mode 4 and 5 applicability by stating that the instrument is only required when the system is required to be operable per TS 3.5.B. The proposed note provides clarifying information related to the Functional Units, and as such is an administrative enhancement of the CTS.

xii. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (d). The proposed

note is equivalent to BWR-STS note #, which modifies the HPCI and ADS Trip Functions. The proposed note states that the trip function instrumentation is not required when steam dome pressure is less than or equal to 150 psig. This is consistent with the applicability of the HPCI and ADS systems. The proposed note provides clarifying information related to the applicability of the Trip Function, and as such is an administrative enhancement of the CTS.

xiii. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (e). The proposed note is equivalent to BWR-STS note **, which modifies the applicability in Operational Modes 4 and 5 for the Loss of Power Functional Units. The proposed note clarifies the mode 4 and 5 applicability by stating that the instrument is only required when the associated EDG is required to be operable per TS 3.9.B. The proposed note provides clarifying information related to the Functional Units, and as such is an administrative enhancement of the CTS.

xiv. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed notes (g) and (j). The proposed notes clarify the trip setpoint for the "4.16 kv Emergency Bus Undervoltage (Degraded Voltage)" Functional Unit. These notes are discussed in item K.8 above. The proposed notes provide clarifying information related to the Functional Units, consistent with the CTS trip setpoint. As such, the proposed notes are an administrative enhancement of the CTS.

xv. Dresden and Quad Cities TSUP Table 3.2.B-1 includes proposed note (i). The proposed note is equivalent to the intent of BWR-STS note (c). The proposed note modifies the HPCI "Condensate Storage Tank Level - Low" and "Suppression Chamber Water Level - High" Functional Units. The note states that the trip function only provides a signal to the pump suction valves. The proposed note provides clarifying information related to the Functional Units, and as such is an administrative enhancement of the CTS.

L. Dresden CTS Table 3.2.3 and Quad Cities CTS Table 3.2-3

Dresden CTS Table 3.2.3 and Quad Cities CTS Table 3.2-3 delineate the required instrumentation, minimum channel requirements, trip level settings, and action requirements for the Control Rod Block Actuation instrumentation. These CTS requirements have been incorporated into TSUP Table 3.2.E-1, "Control Rod Block Instrumentation."

TSUP Table 3.2.E-1 has explicitly defined, in separate sections (consistent with the associated RPS instrumentation functions), the instrumentation requirements for the Control Rod Block instrumentation. This proposed format is an enhancement to the CTS tables, which are organized by individual instrument. The proposed format is consistent with BWR-STS format, and represents a clear and unambiguous delineation of requirements for Control Rod Block instrumentation. The modified format does not represent a relaxation of CTS.

The attached Comparison Matrix C-1 provides a tabular comparison of the CTS table nomenclature and requirements (Instruments, Minimum channels, Applicability, and Trip Setpoints) to the TSUP nomenclature and requirements (Functional Units, Minimum channels, Applicable Operational Modes, and Trip Setpoints). Additional information is provided in Comparison Matrix C-2 (a comparison of CTS and TSUP Action Statements), Comparison Matrix C-3 (a comparison of new functional unit requirements to the associated BWR-STS functional unit requirements), and

Comparison Matrix C-4 (a comparison of the CTS table notation to the TSUP table notation). The requirements in the TSUP Tables are consistent with the Dresden and Quad Cities CTS requirements, except as described below.

1. The CTS nomenclature for the various Control Rod Block instruments has been revised to incorporate the BWR-STS nomenclature, as modified by plant-specific design and nomenclature. The proposed change is administrative in nature and does not represent a relaxation of the CTS.

2. The Dresden and Quad Cities CTS minimum channel per trip system requirement has been revised to match the BWR-STS requirement of minimum channels per trip function. The number of required channels for each function defined in the Dresden and Quad Cities CTS has been revised to ensure consistency with the CTS requirement for both trip systems. The proposed revision of the CTS minimum channel per trip system requirement is an enhancement of the CTS requirement, and as such, represents a clear and unambiguous delineation of requirements. There has been no reduction in the required equipment, therefore, the modified format does not represent a relaxation of CTS.

3. The following CTS functions have been incorporated into TSUP Table 3.2.E-1 (and Table 4.2.E-1): SRM Detector not in Startup Position, and SRM Downscale (Quad Cities CTS only). Upon further review, ComEd has determined that the proposed requirements (applicability, minimum channels, and Trip Setpoints) do not adequately address the current Dresden and Quad Cities design. This will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal. This also applies to the following Table notations, which modify the TSUP functional units: TSUP Table 3.2.E-1, notes (b) and (d); and TSUP Table 4.2.E-1, notes (f) and (h).

4. The Dresden and Quad Cities CTS tables do not specifically address the applicable Operational Mode for each instrument (TSUP Functional Unit). The CTS applicability is defined in the CTS Table notation [Dresden and Quad Cities CTS note (1) and Quad Cities CTS note (8)]. The TSUP applicability is defined by Operational Mode for each Control Rod Block functional unit. The applicability requirements in the TSUP Tables are consistent with the Dresden and Quad Cities CTS requirements, except as described below.

   i. The CTS applicability for the Rod Block Monitor Upscale (flow bias) function (for both Dual Loop and Single Loop operation) is specified as RUN and STARTUP/HOT STANDBY with an exception below 30% power (modes 1, 2, 3 and above 30% power). The TSUP applicability is specified as Operational Mode 1, as modified by note (f). This note states that the instrument is required in Operational Mode 1 with thermal power greater than or equal to 30%. This is not a relaxation of the CTS, since reactor power cannot be increased above 30% in modes 2 and 3.

   ii. The applicability for the following functions have been increased from the CTS applicability of mode 2 to the TSUP applicability of Operational Modes 2 and 5. This proposed change is an enhancement of the CTS, and more conservative than the CTS.

       SRM Upscale
       IRM Detector not in Startup Position (Dresden CTS applicability)
       IRM Upscale
       IRM Downscale

iii. The applicability for the CTS function of "High Water Level in Scram Discharge Volume" has been increased from the CTS applicability of modes 1 and 2 to the TSUP applicability of Operational Modes 1, 2, and 5. This proposed change is an enhancement of the CTS, and more conservative than the CTS.

iv. The applicability for the Quad Cities CTS function of "SDV High Water Level Scram Trip Bypassed" has been revised from the CTS modes of 1 and 2, to the TSUP applicability of mode 5 (note - the Dresden TSUP Table 3.2.E-1 functional unit requirement is an addition to the Dresden CTS). Upon further review, ComEd has determined that the proposed applicability does not adequately address the actual required applicability for this Rod Block function. This will be considered an **OPEN ITEM** for resolution in an Open Item Resolution" submittal.

The Quad Cities CTS "SDV High Water Level Scram Trip Bypassed" rod block assures that no control rod is withdrawn while the scram discharge volume high water level scram function is out of service. This occurs following a scram signal, when the scram function is bypassed in order to reset the scram signal. Therefore, the applicability should include Operational Modes 1 and 2, in order to ensure operability following a scram.

v. The CTS minimum channel requirements for the CTS "SRM Upscale" function have been revised from the CTS value of four (4) per Trip Function (two per Trip System in the CTS table), to the TSUP value of three (3) per Trip Function in Operational Mode 2 and two (2) per Trip Function in Operational Mode 5.

The proposed minimum channel requirement incorporates Dresden and Quad Cities CTS note (5) for Operational Mode 2, which states that one of the four SRM inputs may be bypassed. The proposed revision of the CTS minimum channel per trip system requirements for Operational Mode 2 is an enhancement of the CTS requirement, and as such, represents a clear and unambiguous delineation of requirements. The proposed change does not represent a relaxation of CTS.

The TSUP Operational Mode 5 applicability, and corresponding minimum channel requirements is an addition to the CTS (see item L.4.ii above). The proposed change is not a relaxation of the CTS.

vi. The Dresden CTS setpoint for the "High Water Level in Scram Discharge Volume" rod block has been revised to maintain consistency with the Quad Cities CTS and BWR-STS setpoint. The proposed setpoint is physically (i.e. the amount of water in the SDV) equivalent to the proposed value. The proposed revision of the Dresden CTS setpoint is an enhancement of the CTS requirement, and as such, represents a clear and unambiguous delineation of requirements. The proposed change does not represent a relaxation of CTS.

vii. The Dresden and Quad Cities CTS setpoints for APRM Upscale (flow bias) [both Dual Loop and Single Loop operation] have been revised consistent with Dresden and Quad Cities CTS 2.1.B and the requirements of TSUP 3.11.B (approved by letter and SER dated June 13, 1995). The proposed setpoint removes the modifying multipliers of "(FRP/MFLPD)" for Quad Cities and "(1/FDLRC)" for Dresden. This is an administrative clarification, in that the requirements of TSUP 3.11.B will ensure that the multipliers are greater than or equal to 1.0. Given this limitation, the proposed TSUP setpoint will always be conservative to the multiplied value. The proposed revision of the

CTS setpoints is an enhancement of the CTS requirements, and as such, represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

viii. The Quad Cities CTS setpoint for the "IRM Detector not in Startup Position" rod block has been deleted, consistent with the Dresden CTS and BWR-STS requirements. The Quad Cities CTS setpoint provides design information which is more appropriate for plant administrative controls (i.e. procedures and UFSAR). The deletion of the CTS setpoints is not a relaxation of any CTS requirement.

5. The Dresden CTS Table 3.2.3 and Quad Cities CTS Table 3.2-3 Action requirements have been relocated and incorporated into TSUP Table 3.2.E-1, Actions 50, 51, and 52; and TSUP 3.3.M. Comparison Matrix C-2 provides a comparison of CTS and TSUP Action Statements. The TSUP actions are consistent with CTS and BWR-STS requirements, except as tabulated in Comparison Matrix C-2 and described below:

   i. Dresden Table 3.2.3, note 1 requires two operable trip systems in various operational modes for various instruments (see Comparison Matrix C-1). The note also states that for systems with more than one channel per trip system, if the minimum channel requirement cannot be met for both trip systems, the systems shall be tripped. Quad Cities CTS Table 3.2-3, note 1 also requires two operable trip systems for various instruments and operational modes. Similarly, the Quad Cities CTS note states that for systems with more than one channel per trip system, if the minimum channel requirement cannot be met for one of the trip systems, the condition may exist for up to 7 days, provided that the operable channel is functionally tested immediately and daily thereafter. If the condition lasts longer than 7 days, the system shall be tripped. The Quad Cities CTS note also states that if the minimum channel requirement cannot be met for both trip systems, the systems shall be tripped.

   These requirements in the Dresden and Quad Cities CTS table notes have been incorporated into TSUP Table 3.2.E, Actions 50, 51, and 52; and TSUP 3.3.M. These proposed Action requirements are consistent with BWR-STS Table 3.3.6-1 Action requirements and BWR-STS 3.1.4.3 Actions. The incorporation of the CTS table note into TSUP Table 3.2.E, Actions 50, 51, and 52; and TSUP 3.3.M is an enhancement of the CTS, and represents a clear and unambiguous delineation of requirements. The modified format does not represent a relaxation of CTS.

   ii. For the CTS "Rod Block Monitor" rod block functions, the CTS actions (see L.3.i above for a description of the CTS actions) have been replaced by TSUP Table 3.2.E-1, Action 50 and TSUP 3.3.M. If one channel is inoperable, Action 50 requires immediate declaration of inoperability, and TSUP 3.3.M.1 requires immediate verification that there is not a limiting control rod pattern, and provides a 24 hour Allowed Outage Time (AOT). If the channel cannot be restored to operable status, TSUP 3.3.M.2 requires a trip of the inoperable channel within one hour. If both channels are inoperable, Action 50 requires immediate declaration of inoperability, and TSUP 3.3.M.3 requires a trip of at least one inoperable channel within one hour.

   The proposed actions provide a clear and unambiguous delineation of requirements, relative to the CTS actions. In addition, the AOT for one inoperable channel (24 hours) is more conservative than the Quad Cities CTS AOT (7 days) - (Note: Dresden CTS does

not address one inoperable channel). The proposed Action requirements for the "Rod Block Monitor" rod block functions are not a relaxation of the CTS.

iii. For the CTS "APRM," "SRM," and "IRM" rod block functions, the CTS actions (see L.3.i above for a description of the CTS actions) have been replaced by TSUP Table 3.2.E-1, Action 51. If one channel is inoperable, Action 51 provides a 7 day AOT, after which time the action requires a trip of the inoperable channel in one hour. If two or more channels are inoperable, Action 51 requires a trip of at least one inoperable channel in one hour.

The proposed action is equivalent to the Quad Cities CTS action, with the exception of the redundant testing requirement, and the additional hour to trip the inoperable channel. The proposed action is an administrative enhancement of the Dresden CTS. The proposed actions provide a clear and unambiguous delineation of requirements, relative to the CTS actions.

The "one hour" time period is consistent with BWR-STS and current operating philosophy, and is considered acceptable because it minimizes risk while allowing time for appropriate operator actions to trip the inoperable channel.

The requirement for demonstrating operability of the redundant equipment was originally chosen because there was a lack of plant operating history and a lack of sufficient equipment failure data. Since that time, plant operating experience has demonstrated that testing of the redundant equipment when companion equipment is inoperable, is not necessary to provide adequate assurance of system operability. In fact, removal of the redundant system from service for testing removes the operable channel from monitoring the safety parameter, and creates the risk that the redundant system will fail. Actual industry observations of this type of configuration have indicated that failures of the redundant equipment are related to repeated testing itself and not an indication that the system would have failed should it have been needed.

Therefore, the additional one hour action period and the deletion of the redundant testing is an enhancement of the CTS and not a significant reduction in the level of safety.

iv. For the CTS "Scram Discharge Volume" rod block functions, the CTS actions (see L.4.i above for a description of the CTS actions) have been replaced by TSUP Table 3.2.E-1, Action 52. Proposed Action 52 states that if the number of channels is less than the required number, the inoperable channel shall be tripped in one hour. This proposed action is more conservative than the CTS actions (relative to the instrumentation channels) and an administrative enhancement of the CTS, in that the proposed action provides a more clear and unambiguous delineation of requirements. Therefore the proposed action is not a relaxation of the CTS.

6. Dresden and Quad Cities TSUP Table 3.2.E-1 provides additional Control Rod Block instrumentation requirements, relative to the CTS tables. These requirements include additional rod block Functional Units for ["APRM Inoperative;" "SRM Inoperative;" "SRM Downscale (Dresden);" "IRM Inoperative;" and "SDV Switch in Bypass" (Dresden)]. Comparison Matrix C-3 provides a tabular description of these additional requirements, including applicable modes, minimum channels, and required actions.

Upon further review, ComEd has determined that the proposed additional functional unit of "SRM Downscale"requirements (applicability, minimum channels, and Trip Setpoints) do not adequately address the current Dresden design [this also applies to Dresden TSUP Table 3.2.E-1, note (d)] . This will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal.

The additional instrumentation requirements [with the exception of "SRM Downscale (Dresden)" as described above] are an enhancement to the CTS, and provide an additional level of safety. As such, the additional requirements are not a relaxation of the CTS. The additional requirements are consistent with BWR-STS requirements, except as tabulated in Comparison Matrix C-3, and described below

i. The Dresden TSUP Table 3.2.E-1 applicability for the "SDV Switch in Bypass" function (item 5.b) is Operational Mode 5. Upon further review, ComEd has determined that the proposed applicability does not adequately address the actual required applicability for this Rod Block function. This is discussed as an **OPEN ITEM** in Item L.4.iv above.

ii. The Dresden TSUP Table 3.2.E-1 minimum channel requirement for the "SDV Switch in Bypass" function (item 5.b) is 1 per Trip Function, as compared to the BWR-STS requirement of parenthetical 2 per Trip Function. The proposed requirement is consistent with the station-specific design at Dresden and Quad Cities, and as such, does not represent a reduction in the level of safety.

iii. The TSUP Table 3.2.E-1 Action requirements are equivalent to, and consistent with BWR-STS requirements, with the exception of the Action number. The proposed change is administrative in nature and does not represent a reduction in safety.

7. Dresden CTS Table 3.2.3 and Quad Cities CTS Table 3.2-3 modify various requirements with table notes. These table notes have been relocated and revised, consistent with the format and content of BWR-STS Table 3.3.6-1 table notes and the plant-specific design. Comparison Matrix C-4 provides a comparison of CTS and TSUP table notes. The proposed TSUP table notes are equivalent to the CTS notes, except as tabulated in Comparison Matrix C-4 and described below:

   i. Dresden and Quad Cities CTS table note 1 has been relocated and incorporated into TSUP Table 3.2.E-1, note (a); Columns 3 and 4 ("Minimum Channels per Trip Function" and "Applicable Operational Modes); and Actions 51 and 52. TSUP note (a) incorporates the CTS note 1 sentence which modifies the RBM upscale rod block applicability. The proposed note is consistent with BWR-STS note (a). The incorporation of the remainder of CTS note 1 is described in items L.4, and L.5 above. The relocation of CTS note 1 into various parts of TSUP Table 3.2.E-1 and is an administrative enhancement of the CTS, and as such, represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

   ii. Dresden and Quad Cities CTS note 5 has been relocated to TSUP Table 3.2.E-1, Column 3. note (f). This relocation is discussed in item L.4.v above. The relocation of CTS note 5 is an administrative enhancement of the CTS, and as such, represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

iii. Dresden and Quad Cities CTS note 7 has been relocated to TSUP 3.12.A. The CTS note modifies the APRM and RBM rod block functions, and states that the functions are not required while performing low power physics tests at atmospheric pressure during or after refueling at power levels not to exceed 5 MWt. The relocation of CTS note 7 is an administrative enhancement of the CTS, and as such, represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

iv Quad Cities CTS note 8 has been relocated and incorporated into TSUP Table 3.2.E-1, Column 3 (Applicable Operational Modes) for both Dresden and Quad Cities. The CTS note modifies the IRM rod block functions and states that the modified IRM function occurs when the reactor mode switch is in the Refuel or Startup/Hot Standby positions. The relocation of Quad Cities CTS note 8 is an administrative enhancement of the CTS, and as such, represents a more clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

v. Quad Cities CTS note 9 has been deleted from TSUP. The CTS note modifies the SRM Downscale rod block function, and states that the trip is bypassed when the SRM is fully inserted. The Quad Cities CTS note provides design information which is more appropriate for plant administrative controls (i.e. procedures and UFSAR). The deletion of the Quad Cities CTS note is not a relaxation of any CTS requirement.

vi. Quad Cities CTS note 10 has been relocated into TSUP Table 3.2.E-1, Column 2 (Trip Setpoint) for both Dresden and Quad Cities. The Quad Cities CTS note modifies the RBM upscale rod block function and states that the setpoint shall be established as specified in the Core Operating Limits Report. The relocation of Quad Cities CTS note 10 is an administrative enhancement of the CTS, and as such, represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

vii. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed notes (b) and (d). Proposed note (b) modifies the TSUP "SRM Detector not full in" functional unit. Proposed note (d) modifies the TSUP "SRM Downscale" functional unit.

Upon further review, ComEd has determined that the proposed requirements for the two TSUP functional units (applicability, minimum channels, and Trip Setpoints) do not adequately address the current Dresden and Quad Cities design (this is also described in Item L.6 above). ComEd has also determined that this discrepancy also applies to the modifying Table Notation [TSUP Table 3.2.E-1, notes (b) and (d); and TSUP Table 4.2.E-1, notes (f) and (h)]. As stated in Item L.6 above, this will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal.

viii. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed note (f). The proposed note is equivalent to BWR-STS note "*", which modifies the applicability of the RBM rod block functions. The proposed note states that the RBM rod block functions are required (in mode 1) when thermal power is greater than or equal to 30% of rated thermal power. The proposed note provides clarifying information, and as such is an administrative enhancement of the CTS. The proposed note is not a relaxation of the CTS.

ix. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed note (g). The proposed note is equivalent to BWR-STS note "**", which modifies the applicability of the SDV rod

block functions. The proposed note states that the SDV rod block functions are required (in mode 5) with more than one control rod withdrawn, but not applicable to control rods removed per Specification 3.10.I or 3.10.J. The proposed note provides clarifying information, and as such is an administrative enhancement of the CTS. The proposed note is not a relaxation of the CTS.

x. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed note (h). The proposed note is equivalent to BWR-STS Table 3.3.6-2, note "*", which modifies the trip setpoint for the APRM upscale rod block (Dual Loop and Single Loop operation). The proposed note describes the flow-based setpoint. The proposed note provides clarifying information, and as such is an administrative enhancement of the CTS. The proposed note is not a relaxation of the CTS.

xi. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed note (i). The proposed note modifies the setpoint for the SRM Downscale rod block function. The proposed note is added to specify an exception to the 3 cps requirement. Upon further review, ComEd has determined that the proposed note is a relaxation which is not applicable to the Dresden and Quad Cities station-specific design. This will be considered an **OPEN ITEM** for resolution in the final "clean-up" submittal.

x. Dresden and Quad Cities TSUP Table 3.2.E-1 includes proposed note (j). The proposed note modifies the mode 5 applicability for the "APRM Inoperative" and "APRM Startup Neutron Flux - High" rod block functions. The proposed note requires operability of the functions (in mode 5) only during shutdown margin demonstrations performed per TSUP 3.12.B. The proposed note is based upon recent NRC approval of a similar change for Limerick Station (Amendment 41/7) which indicates that the APRMs are only required during shutdown margin testing while in mode 5. The proposed note provides clarifying information, and as such is an administrative enhancement of the CTS. The proposed note is not a significant reduction in the margin of safety provided by the modified functions.

M. Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1

Dresden CTS 4.2.A, 4.2.B, and 4.2.C specify the surveillance requirements for Core and Containment Cooling system instrumentation, Rod Block instrumentation, and Isolation instrumentation. These sections specify Instrument Functional Test, Channel Calibration, and Instrument Check requirements for various instrumentation. These CTS surveillance requirements also reference Table 4.2.1 to specify the associated frequency for each required surveillance. These requirements have been incorporated into TSUP 4.2.A.1, 4.2.B.1, and 4.2.C.1, respectively, and are discussed in items H.1, H.2, and H.3 above.

Quad Cities CTS 4.2.A, 4.2.B, and 4.2.C specify the surveillance requirements for Core and Containment Cooling system instrumentation, Rod Block instrumentation, and Isolation instrumentation. These sections specify Instrument Functional Test, Channel Calibration, and Instrument Check requirements for various instrumentation. The CTS surveillance requirements also reference Table 4.2-1 to specify the associated frequency for each required surveillance. These requirements have been incorporated into TSUP 4.2.A.1, 4.2.B.1, and 4.2.C.1, respectively, and are discussed in items H.1, H.2, and H.3 above.

The requirements of Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1 have been

incorporated into TSUP Tables 4.2.A-1 (Isolation Actuation Instrumentation Surveillance Requirements), 4.2.B-1 (ECCS Actuation Instrumentation Surveillance Requirements), 4.2.E-1 (Control Rod Block Instrumentation Surveillance Requirements), 4.2.F-1 (Accident Monitoring Instrumentation Surveillance Requirements), 4.2.I-1 (Suppression Chamber and Drywell Spray Actuation Instrumentation Surveillance Requirements), TSUP 4.6.E and 4.6.F, and TSUP 4.2.K (Quad Cities only). In addition, a requirement in Quad Cities CTS Table 4.2-1 (Steam Jet Air Ejector Off Gas Isolation) has been relocated to the Offsite Dose Calculation Manual in accordance with the guidance in Generic Letter 89-01. This is discussed in item B.6 above.

The separation of the CTS table into individual and separate TSUP tables, and relocation of CTS surveillance frequencies into these tables, is consistent with BWR-STS format, and is an administrative enhancement of the CTS. As such, the proposed format represents a clear and unambiguous delineation of requirements. The proposed format is not a relaxation of CTS.

Comparison Matrix A-5 provides a tabulated cross-reference and comparison of the CTS and TSUP surveillance frequencies for the instruments listed in Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1. Additional information is provided in Comparison Matrix A-6 (CTS versus TSUP Table notation), and Comparison Matrix A-7 (proposed surveillance frequencies for new functional unit requirements in TSUP Tables 4.2.A-1, 4.2.B-1, and 4.2.E-1).

The TSUP surveillance frequencies for the applicable Functional Units (as listed in Comparison Matrix A-5) are consistent with, or more conservative than CTS surveillance frequencies, except as described below:

1. Based upon the information in Comparison Matrix A-5, the proposed surveillance frequencies for the following instruments are less restrictive than the CTS surveillance frequencies (Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1).

    i. Channel Checks

    <u>ECCS Instrumentation</u>
    Undervoltage Emergency Bus (Dresden CTS only)
    Degraded Voltage Emergency Bus

    The plant specific design for this instrumentation does not meet the definition for a Channel Check. The instrumentation is a switch, as opposed to an indicator. As such, it is not possible to perform a comparison of the channel indication with that of other independent channels monitoring the same parameter. The proposed channel check frequency of N/A is consistent with BWR-STS requirements and the plant-specific design. The TSUP Channel Check requirement is not a significant reduction in the level of safety.

    <u>Rod Blocks</u>
    APRM Upscale (Startup/Hot Standby) (only referenced in Dresden CTS)
    IRM Upscale (Dresden)
    IRM Downscale (Dresden)

    The Dresden CTS surveillance frequency for Channel Check for the above instruments is specified as "Weekly" or "Daily when the instrumentation is required to be operable." The Quad Cities CTS surveillance frequency is specified as "None." The proposed requirement of N/A is consistent with BWR-STS and Quad Cities CTS requirements. The

TSUP Channel Check requirement is not a significant reduction in the level of safety.

Containment Monitoring
Temperature

The Dresden CTS surveillance requirement for "Containment Monitoring - Temperature" is a duplication of Dresden CTS Table 4.2.4 surveillance requirements for the "Drywell Temperature" instrument channel. This requirement has been relocated to TSUP Tables 3.2.F-1 and 4.2.F-1. The proposed Channel Check surveillance frequency of "Monthly" is consistent with BWR-STS and NUREG-1433 requirements, as well as the duration of the Allowable Outage Time of 30 days (TSUP Table 3.2.F-1, Action 60). The proposed surveillance frequency is not a significant reduction in the margin of safety.

ii. Channel Functional Tests

Safety/Relief Valve Monitoring
Safety/Relief Valve Position Indicator (Acoustic Monitor)
Safety Valve Position Indicator (Acoustic Monitor)

The Dresden CTS surveillance requirements for "Safety/Relief Valve Position Indicator (Acoustic Monitor)" and "Safety Valve Position Indicator (Acoustic Monitor)" are a duplication of Dresden CTS Table 4.2.6 and Quad Cities CTS Table 4.2-4 (Post Accident Monitoring Instrumentation Surveillance Requirements) surveillance requirements. The surveillance requirements have been relocated to TSUP Table 4.2.F-1, TSUP 4.6.E (Safety Valves), and TSUP 4.6.F.2 (Relief Valves). However, the plant-specific design for this instrumentation does not meet the definition for a Channel Functional Test. The instrumentation is an indicator, as opposed to a switch or trip function. As such, it is not possible to perform a Channel Functional Test. Therefore, the CTS requirements for a functional test [Dresden CTS Table 4.2.1, note (7), Dresden CTS Table 4.2.4, note (1), and Quad Cities CTS Table 4.2-2, note "**"] are ambiguous, and have not been retained in TSUP. The proposed Channel Functional Test frequency of N/A is consistent with BWR-STS and NUREG-1433 requirements, and the plant-specific design. The proposed surveillance frequency is not a significant reduction in the margin of safety.

In addition, Dresden CTS Table 4.2.1, note (8), Dresden CTS Table 3.2.6, note (2), and Quad Cities CTS Table 3.2-4, note (5) specify the Action requirements for Safety/Relief Valve Position Indicator instrumentation. These requirements have been relocated to TSUP Table 3.2.F-1, Actions 63a and 63b. The proposed Actions are equivalent to the CTS notes. The proposed change is not a relaxation of CTS.

iii. Channel Calibrations

Rod Blocks

APRM Downscale (Quad Cities only)

The Quad Cities CTS Channel Calibration frequency of "Quarterly" has been revised to "Semiannual." This proposed requirement is consistent with the proposed Channel Calibration frequency for the APRM Flow Variable Functional Unit (which is more restrictive than the CTS frequency of "Refuel"). Based upon the more conservative

calibration frequency for the APRM Flow Variable functional unit, as well as historical instrument calibration data, the proposed surveillance frequency for the APRM Downscale functional unit is not a significant reduction in the margin of safety.

SRM Upscale (Quad Cities only)

The Quad Cities CTS Channel Calibration frequency of "S/U and S/D" has been revised to "Sesquiannual." This proposed requirement is based upon historical instrument calibration data, and therefore, is not a significant reduction in the margin of safety.

Main Steamline Isolation
Control Room Ventilation System Isolation (Quad Cities only)
Steamline High Flow

The Quad Cities CTS Channel Calibration frequency of "Quarterly" has been revised to "Sesquiannual." The proposed Channel Calibration surveillance frequency is consistent with BWR-STS and NUREG-1433 requirements, as well as historical instrument calibration data. Therefore, the proposed surveillance frequency is not a significant reduction in the margin of safety.

Reactor Building Vent Isolation and SBGT Initiation
Refueling Floor Radiation Monitors

The Quad Cities CTS Channel Calibration frequency of "Quarterly" has been revised to "Sesquiannual." The proposed Channel Calibration surveillance frequency is consistent with BWR-STS and NUREG-1433 requirements, as well as historical instrument calibration data. Therefore, the proposed surveillance frequency is not a significant reduction in the margin of safety.

2. The following Dresden CTS Table 4.2.1 Instrument Channels have not been retained in TSUP: "Containment Monitoring - Torus Water Level Indicator - Narrow Range," and "Torus Water Level - Sight Glass." These instrument channels are duplicated from Dresden CTS Table 4.2.4 surveillance requirements (Post Accident Monitoring Instrumentation Surveillance Requirements).

   These instrument channels were also eliminated from TSUP Table 4.2.F-1 (Accident Monitoring Surveillance Requirements). These instruments do not meet the criteria for inclusion in Table 4.2.F-1 as a Post Accident Monitoring instrument (Reg Guide 1.97 Category 1, Type A variable instrument). This is discussed further below in item N.3. Based upon this discussion, the deletion of these instrument channels (and the associated surveillance requirements) is not a significant reduction in the margin of safety.

3. The following CTS functions have been incorporated into TSUP Table 4.2.E-1 (and Table 3.2.E-1): SRM Detector not in Startup Position, and SRM Downscale (Quad Cities CTS only). Upon further review, ComEd has determined that the proposed surveillance requirements (channel checks, channel functional tests, and channel calibration) do not adequately address the current Dresden and Quad Cities design. This also applies to the following Table notations, which modify the TSUP functional units: TSUP Table 3.2.E-1, notes (b) and (d); and TSUP Table 4.2.E-1, notes (f) and (h). This was discussed above in Items L.6 and L.7.vii, and will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal.

4. The following Dresden CTS Table 4.2.1 function (Containment Monitoring - Pressure Indicator, -5 in. Hg to +5 psig) was not retained in TSUP. This function monitors Torus Pressure, and is considered a Post Accident Monitoring Instrument. As such, the function should have been incorporated into TSUP Tables 3.2.F-1 and 4.2.F-1. This is discussed below in Item N.2, and will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal.

5. Upon further review of the proposed TSUP requirements in relation to Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1, ComEd has identified several discrepancies with respect to the proposed surveillance frequencies. These discrepancies are listed below, and will require revision in the final "clean-up" submittal. These discrepancies will be considered an **OPEN ITEM** for resolution in an "Open Item Resolution" submittal. .

   ii. Channel Functional Tests

   <u>Rod Blocks</u>
   SDV Switch in Bypass

   ii. Channel Calibrations

   <u>ECCS Instrumentation</u>
   Reactor Vessel Pressure - High

   <u>Rod Blocks</u>
   APRM Downscale (Dresden TSUP)
   IRM Detector not full in
   SRM Upscale (Dresden TSUP)

   <u>Main Steamline Isolation</u>
   MSL Flow - High (Dresden TSUP)
   MSL Tunnel Radiation - High

   <u>Containment Monitoring</u>
   Pressure Indicator, -5 in. to + 5 psig (Dresden TSUP)
   Drywell - Suppression Chamber Differential Pressure (Dresden TSUP)

   <u>Safety/Relief Valve Monitoring</u>
   Safety/Relief Valve Position Indicator (Acoustic Monitor) (Dresden TSUP)
   Safety Valve Position Indicator (Acoustic Monitor) (Dresden TSUP)

   <u>Reactor Building Vent Isolation and SBGT Initiation</u>
   Refueling Floor Radiation Monitors (Dresden TSUP)

6. Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1 modify various requirements with table notes. These table notes have been relocated and revised, consistent with the format and content of table notes for BWR-STS Tables 4.3.2.1-1, 4.3.3.1-1, 4.3.6-1, and 4.3.7.5-1; and the plant-specific design. Comparison Matrix A-5 provides a comparison of CTS and TSUP table notes. The proposed TSUP table notes are equivalent to the CTS notes, except as tabulated in Comparison Matrix A-5, and described below:

i. Dresden and Quad Cities CTS table note (1), and the accompanying CTS graphs (Dresden CTS Figure 4.1.1 and Quad Cities CTS Figure 4.1-1), allow the functional test frequency for the affected parameters to be extended to quarterly using an outdated methodology. This note and the accompanying graphs are being deleted from the proposed TS. The deletion of the note and associated graph represents a more conservative approach for determining functional test surveillance frequencies, consistent with BWR-STS and other licensees. The deletion of the note and graph does not represent a relaxation of the CTS.

ii. Dresden and Quad Cities CTS Table note (2) specifies the applicability, functional test frequencies (Dresden and Quad Cities), calibration frequencies (Dresden), and instrument checks (Dresden) for various instruments. These requirements have been incorporated into columns 2, 3, 4, and 5 of the applicable TSUP tables. The incorporation of the table notes into the table requirements is consistent with BWR-STS format, and is an administrative enhancement of the CTS. As such, the proposed format represents a more clear and unambiguous delineation of requirements. The proposed format is not a relaxation of CTS.

iii. Dresden and Quad Cities CTS Table note (3) modifies the functional test requirement for various instruments. This modifying note provides clarifying information related to the procedure for performing a functional test. The note has not been retained in TSUP. The clarifying information in the note is more appropriate for plant administrative controls (i.e. procedures and UFSAR). As such, the deletion of the information and note is administrative, and does not represent a relaxation of CTS.

iv. Dresden CTS notes (5) and (6) provide the required actions and clarifying information for the minimum number of channels for the Drywell - Torus Differential Pressure instrumentation. These requirements are also specified in column 1 and note (4) of Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4.

These action requirements have been relocated to TSUP 3.7.H.2 and 3.7.H.4. Proposed TSUP action 3.7.H.2 is consistent with Dresden CTS Table 4.2.1, note (6) [and note (4) of Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4]. Proposed TSUP action 3.7.H.4 is more conservative than Dresden CTS Table 4.2.1, note (6) [and note (4) of Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4]. Although the proposed action specifies an 8-hour AOT (if all indication is lost), versus the CTS 6-hour AOT, the TSUP shutdown requirement of 8 hours is far more conservative than the CTS 24 hour shutdown requirement.

iv. Dresden CTS note (9) modifies the functional test requirement for the SDV Rod Block instrumentation. This modifying note provides clarifying information related to the plant-specific equipment and design. The note has not been retained in TSUP. The clarifying information in the note is more appropriate for plant administrative controls (i.e. procedures and UFSAR). As such, the deletion of the information and note is administrative, and does not represent a relaxation of CTS.

v. Dresden CTS note (10) and Quad Cities CTS note (8) modifies the functional test requirement for the Degraded Voltage instrumentation. This modifying note provides clarifying information related to the testing of equipment specific timers. The note has not been retained in TSUP. The clarifying information in the note is more appropriate for plant administrative controls (i.e. procedures and UFSAR). As such, the deletion of the

information and note is administrative, and does not represent a relaxation of CTS.

vi. Dresden CTS note (11) and Quad Cities CTS note (9) describe the time delay verification for the HPCI High Steam Flow Isolation time delay setting. This was not retained in TSUP Table 4.2.A-1. This is discussed and justified in item J.7.viii above. Based upon this justification. the proposed deletion of the CTS note is not a relaxation of CTS.

vii. Dresden CTS notes (12) and (13), and Quad Cities CTS note (10), have been relocated to TSUP Table 4.2.A-1, note (a), and TSUP Table 4.2.B-1, note (e). The relocation of the table notes into the table requirements is consistent with BWR-STS format, and is an administrative enhancement of the CTS. As such, the proposed change represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

viii. Quad Cities CTS note (5) modifies the functional test and calibration frequencies for various rod block instruments. This requirement has been incorporated into columns 3 and 4 of TSUP Table 4.2.E-1. The incorporation of the table notes into the table requirements is consistent with BWR-STS format, and is an administrative enhancement of the CTS. As such, the proposed change represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

ix. Quad Cities CTS note (6) specifies the calibration frequency and requirement for the SRM and IRM positioning mechanism. This requirement has not been retained in TSUP, consistent with Dresden CTS requirements. This deletion does not represent a significant reduction in the margin of safety provided by the CTS.

x. Quad Cities CTS note (7) specifies that Logic System Functional test requirements are provided in the applicable section for the associated system. This has been relocated to TSUP 4.2.A.2, 4.2.B.2, 4.2.I.2. The relocation is consistent with BWR-STS format, and is an administrative enhancement of the CTS. As such, the proposed change represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

xi. Dresden and Quad Cites TSUP tables 4.2.A-1, 4.2.B-1, and 4.2.E-1 include additional table notation, consistent with BWR-STS requirements and table notation (see Comparison Matrix A-5 for a tabulated listing). These additional notes provide necessary clarification of the surveillance requirements and maintain consistency with the corresponding LCO tables. As such, the proposed change represents a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of CTS.

5. Dresden and Quad Cities TSUP Tables 4.2.A-1, 4.2.B-1, and 4.2.E-1 provide surveillance requirements for additional Functional Units, relative to Dresden CTS Table 4.2.1 and Quad Cities CTS Table 4.2-1. These additional Functional Units are described in Comparison Matrix A-6. The proposed surveillance frequencies for these additional Functional Units are consistent with BWR-STS surveillance frequency requirements as modified for plant-specific design. Comparison Matrix A-6 provides a tabular description of these proposed surveillance frequencies. The proposed surveillance requirements are an enhancement of the CTS requirements, and increase the level of safety. The proposed surveillance requirements are not a relaxation of CTS.

N. Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4

Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 delineate the required instrumentation, total channel requirements, minimum channel requirements, instrument range, and instrument readout location for Post Accident Monitoring instrumentation. The Action requirements for the instruments are provided as table notes.

These CTS requirements have been relocated and incorporated into TSUP Table 3.2.F-1. The proposed TSUP Table is consistent with BWR-STS Table 3.3.7.5-1 format and nomenclature. This proposed format and nomenclature is an enhancement to the CTS tables, and represents a clear and unambiguous delineation of requirements for ECCS Actuation Instrumentation. The modified format and nomenclature does not represent a relaxation of CTS.

The attached Comparison Matrix D-1 provides a tabular comparison of the CTS table nomenclature and requirements (Instruments, Minimum channels, Total Channels, Instrument Readout Location, and Range) to the TSUP nomenclature and requirements (Functional Units, Total Channels, Minimum Channels and Applicability). The requirements in the TSUP Tables are consistent with the Dresden and Quad Cities CTS requirements, except as tabulated in Comparison Matrix D-1, and described below:

1. The CTS table columns titled "Instrument Readout Location" and "Instrument Range" have been deleted from TSUP, consistent with BWR-STS, NUREG 1433, approved specifications for other licensees, and Generic Letter (GL) 91-08 guidance. The proposed change is administrative in nature and does not represent a relaxation of the CTS.

2. The Dresden CTS Table 3.2.6 and 4.2.1, and Quad Cities CTS Table 3.2-4 requirement for "Torus Pressure" was not retained in proposed TSUP Tables 3/4.2.F-1. Upon further review, ComEd has determined that this parameter should have been retained in TSUP. This will be considered an **OPEN ITEM** for resolution in the final "clean-up" submittal

3. The following instruments from Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 have not been retained in TSUP Table 3.2.F-1. These instrument channels were also eliminated from TSUP Table 4.2.F-1. The primary purpose of the Post Accident Monitoring instrumentation (TSUP Tables 3/4.2.F-1) is to display plant variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Events. The instruments that monitor these variables are designated as Type A, Category I, and non-Type A, Category I, in accordance with Regulatory Guide 1.97. Based upon the information submitted by ComEd on August 1, 1985 for Dresden and Quad Cities Station [and approved by the NRC by SERs dated August 16, 1988 and September 1, 1988}, the deleted CTS instruments do not meet the criteria for inclusion in TSUP Tables 3.2.F-1 and 4.2.F-1 as a Post Accident Monitoring instrument (Reg Guide 1.97 Category 1, Type A and non-Type A variable instruments). Therefore, the deletion of these instrument channels (and the associated surveillance requirements) is not a significant reduction in the margin of safety.

   Torus Water Level Indicator [-20 to +20 inches (narrow range) - Dresden] [-5 inches - +5 inches (narrow range) - Quad Cities]

   Torus Water Local Sight Glass [40 inch range (narrow range)]

4. The Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 requirements for the Torus to Drywell Differential Pressure monitoring instrument have been relocated to TSUP 3.7.H. These instruments do not meet the criteria for inclusion in TSUP Tables 3.2.F-1 and 4.2.F-1 as a Post Accident Monitoring instrument (Reg Guide 1.97 Category 1, Type A and non-Type A variable instruments). Therefore, the relocation of these instrument channels (and the associated surveillance requirements) is not a significant reduction in the margin of safety.

   The Quad Cities CTS Table 3.2-4 minimum channel requirement for the Torus to Drywell Differential Pressure monitoring instrumentation has been revised from 2 to the TSUP 3.7.H requirement of 1. This TSUP minimum channel requirement, concurrent with the TSUP 3.7.H Action requirements, are consistent with the Dresden CTS minimum channel requirement. The Action requirements of TSUP 3.7.H ensure adequate instrumentation for the determination of Torus to Drywell differential pressure. Therefore, the proposed minimum channel requirement is not a significant reduction in the margin of safety.

   The Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 applicability requirements for the Torus to Drywell Differential Pressure monitoring instrumentation has been revised from Operational Modes 1 and 2 to Operational Mode 1, beginning within 24 hours after thermal power is greater than 15% of rated, and ending within 24 hours prior to reducing thermal power to less than 15% of rated. The proposed applicability is consistent with BWR-STS requirements and based upon the applicability requirement for maintaining the drywell to suppression chamber at a specified level. Drywell-to-suppression chamber differential pressure must be controlled when the primary containment is inert. The primary containment must be inert in MODE 1, since this is the condition with the highest probability for an event that could produce hydrogen. It is also the condition with the highest probability of an event that could impose large loads on the primary containment. Inerting primary containment is an operational problem because it prevents primary containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the unit startup and is de-inerted as soon as possible in the unit shutdown. As long as reactor power is less than 15% of rated, the probability of an event that generates hydrogen or excessive loads on primary containment occurring within the first 24 hours following a startup or within the last 24 hours prior to a shutdown is low enough that these "windows," with the primary containment not inerted, are also justified. The 24 hour time period is reasonable time to allow plant personnel to perform inerting or de-inerting. Therefore, the proposed applicability is not a significant reduction in the margin of safety.

5. The Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 channel requirement for "Number Provided" has been revised to the BWR-STS "Required Channel" requirement (2 channels) for the following instruments: Reactor Pressure (Dresden - 3 channels, Quad Cities - 4 channels); Drywell Temperature (Dresden and Quad Cities - 6 channels); and Neutron Monitoring (Dresden and Quad Cities - 4 channels). The reduction in the number of required channels, concurrent with the Action requirement defined by Dresden CTS Table 3.2.6, note (1) [TSUP Table 3.2.F-1, Action 60] does not reduce the margin of safety. The referenced action does not specify an LCO/AOT until the number of operable channels is reduced to the minimum channel requirement. The requirement for the number of channels provided does not impact the required actions.

6. The Dresden CTS Table 3.2.6 and Quad Cities CTS Table 3.2-4 Action requirements are provided as table notation. These have been relocated to TSUP Table 3.2.F-1, Actions 60, 61, 62, and 63. This relocation is described below. The proposed actions are consistent with BWR-STS

and CTS, except as described below.

i. Quad Cities CTS Table 3.2-4, note (1) clarifies the applicability of the instrumentation requirements. This has been incorporated into TSUP Table 3.2.F-1, column 4. This is an administrative enhancement of the CTS, and therefore, not a relaxation of CTS.

ii. Quad Cities CTS Table 3.2-4, note (2) states that provisions exist for local sampling and monitoring of the drywell atmosphere. clarifies the applicability of the instrumentation requirements. The note has not been retained in TSUP. The information in the note is more appropriate for plant administrative controls (i.e. procedures and UFSAR). As such, the deletion of the information and note is administrative, and does not represent a relaxation of CTS.

iii. Dresden CTS Table 3.2.6, notes (1), (3), and (4), and Quad Cities CTS Table 3.2-4, notes (3), (4) , and (6) have been relocated and incorporated into TSUP Table 3.2.F-1, Action 60.a and 60.b. Proposed Action 60.a is an enhancement to the CTS action in that it provides a specific shutdown requirement following a 30 day AOT. This is a clarification of the CTS requirement.

The shutdown requirement in proposed Action 60.b provides additional time (48 hours) to restore inoperable instrumentation, relative to the Dresden CTS note (1) and Quad Cities CTS note (4) Actions. This period of time is consistent with industry accepted and approved requirements, and does not result in a significant reduction in the level of safety.

The TSUP Action 60.b, 48-hour AOT is more conservative than the 7-day AOT which is specified in Dresden CTS notes (3) and (4), and Quad Cities CTS notes (3) and (6) .

iv. Dresden CTS Table 3.2.6, note (2) and Quad Cities CTS Table 3.2-4, note (5) Actions have been relocated and incorporated into TSUP Action 63.a and 63.b. The proposed Action is equivalent to the CTS Actions, with the exception of the shutdown endpoint. The CTS Actions require an orderly shutdown , with the reactor depressurized to less than 90 psig in 24 hours. TSUP Action 63.b requires the reactor be in Hot Shutdown within 12 hours. The 12 hour time period is more conservative than the CTS requirement of 24 hours. The Hot Shutdown endpoint (Operational Mode 3) is consistent with the applicability of the instrumentation (Operation Modes 1 and 2).

v. Dresden CTS Table 3.2.6, note (5) and Quad Cities CTS Table 3.2-4, note (8) Actions have been relocated and incorporated into TSUP Action 62.b and 62.c. The proposed Actions are equivalent to the CTS Actions, with the exception that the proposed Actions provide a specific shutdown requirement following a 30 day AOT. This is an enhancement and clarification of the CTS requirements, and is not a relaxation of the CTS. The TSUP Action 62.a is an addition to the CTS requirements, and reflects the addition of a new Functional Unit (Drywell Oxygen Concentration - Analyzer and Monitor). TSUP Action 62.a is consistent with TSUP Actions 62.b and 62.c. This is an enhancement of the CTS, and increases the level of safety provided by the Technical Specifications.

vi. Quad Cities CTS Table 3.2-4, note (7) Action has been relocated and incorporated into Dresden and Quad Cities TSUP Action 61. This Action specifies the required actions for the "Drywell Radiation Monitor" instrument. The proposed TSUP Action replaces

Dresden CTS note (1) for the "Drywell Radiation Monitor" instrument. The proposed action is equivalent to Quad Cities CTS note (7) action. The replacement of Dresden CTS note (1) with the proposed action for the Drywell Radiation Monitor instrument, is an enhancement of the CTS action requirement, in that it provides a clear and unambiguous delineation of requirements. The proposed change is not a relaxation of the Dresden CTS.

O. Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2

Dresden and Quad Cities CTS 4.2.E specifies the surveillance requirements for Post Accident Monitoring Instrumentation. This CTS section specifies Functional Test and Channel Calibration requirements for various instruments. These CTS surveillance requirements also reference Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 in order to specify the associated frequency for each required surveillance. These requirements have been incorporated into TSUP 4.2.F, and are discussed in item H.5, above.

The requirements of Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 have been incorporated into TSUP Table 4.2.F-1 (Accident Monitoring Instrumentation Surveillance Requirements) and TSUP 4.7.H (Drywell - Suppression Chamber Differential Pressure). Comparison Matrix D-2 provides a tabulated comparison of CTS surveillance frequency requirements to TSUP surveillance frequency requirements. The proposed frequencies are consistent with CTS frequencies except as tabulated in Comparison Matrix D-2, and described below:

1. The Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 requirement for "Torus Pressure" was not retained in proposed TSUP Tables 4.2.F-1. Upon further review, ComEd has determined that this parameter should have been retained in TSUP. This will be considered an **OPEN ITEM** for resolution in the final "clean-up" submittal

2. The following instruments from Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 have not been retained in TSUP Table 4.2.F-1. These instrument channels were also eliminated from TSUP Table 3.2.F-1. The primary purpose of the Post Accident Monitoring instrumentation (TSUP Tables 3/4.2.F-1) is to display plant variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Events. The instruments that monitor these variables are designated as Type A, Category I, and non-Type A, Category I, in accordance with Regulatory Guide 1.97. Based upon the information submitted by ComEd on August 1, 1985 for Dresden and Quad Cities Station [and approved by the NRC by SERs dated August 16, 1988 and September 1, 1988}, the deleted CTS instruments do not meet the criteria for inclusion in TSUP Tables 3.2.F-1 and 4.2.F-1 as a Post Accident Monitoring instrument (Reg Guide 1.97 Category 1, Type A and non-Type A variable instruments). Therefore, the deletion of these instrument channels (and the associated surveillance requirements) is not a significant reduction in the margin of safety.

   Torus Water Level Indicator [-20 to +20 inches (narrow range) - Dresden] [-5 inches - +5 inches (narrow range) - Quad Cities]

Torus Water Local Sight Glass [40 inch range (narrow range)]

3. The Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 surveillance requirements for the Torus to Drywell Differential Pressure monitoring instrumentation have been relocated to TSUP 4.7.H. These instruments do not meet the criteria for inclusion in TSUP Tables 3.2.F-1 and 4.2.F-1 as a Post Accident Monitoring instrument (Reg Guide 1.97 Category 1, Type A and non-Type A variable instruments). Therefore, the relocation of these instrument channels (and the associated surveillance requirements) is not a significant reduction in the margin of safety.

   The Dresden CTS Channel Check surveillance frequency (Daily) has been retained in Dresden TSUP 4.7.H and added to Quad Cities TSUP 4.7.H. Performance of the daily channel check (comparison of the parameter indicated on one channel against a similar parameter on other channels) ensures that a gross failure of instrumentation has not occurred. The channel check is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or instrument degradation. A channel check will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each channel calibration. Performance of the daily channel check ensures that undetected outright channel failure is limited to 24 hours.

   The Quad Cities CTS Channel Calibration frequency (Quarterly) has been extended to Sesquiannual (18 months). The proposed Channel Calibration surveillance frequency is consistent with BWR-STS and NUREG-1433 requirements, as well as historical instrument calibration data. In addition, the proposed channel check frequency will ensure operability of the instrumentation on a daily basis. The proposed surveillance frequency is not a significant reduction in the margin of safety.

   Upon further review of the proposed Dresden TSUP, ComEd has identified a discrepancy with respect to the proposed Channel Calibration frequency. This discrepancy is discussed in item M.5 above, and will require revision in the final "clean-up" submittal. This will be considered an **OPEN ITEM.**

4. Based upon the information in Comparison Matrix D-2, the proposed surveillance frequencies for the following instruments are less restrictive than the CTS surveillance frequencies (Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2).

   i. Channel Checks

      The following Dresden and Quad Cities CTS Channel Check surveillance frequencies have been extended from "Daily" to "Monthly." The proposed channel check surveillance frequency is consistent with BWR-STS and NUREG-1433 requirements, as well as the duration of the Allowable Outage Time of 30 days (TSUP Table 3.2.F-1, Action 60). The proposed surveillance frequency is not a significant reduction in the margin of safety.

      Reactor Pressure
      Reactor Water Level
      Torus Water Temperature

Torus Air Temperature (Quad Cities CTS and TSUP only)
Drywell Pressure (Narrow Range)
Drywell Pressure (Wide Range) [Dresden]
Drywell Temperature
(Source Range) Neutron Monitoring

ii. Channel Calibrations

The following Quad Cities CTS Channel Calibration frequencies have been extended from "Quarterly," "Semiannual," and "Annual" to "Sesquiannual" (18 months). The proposed channel calibration surveillance frequency is consistent with BWR-STS and NUREG-1433 requirements, as well as historical instrument calibration data. In addition, the proposed channel check frequencies will ensure operability of the instrumentation on a monthly basis. Therefore, the proposed surveillance frequencies are not a significant reduction in the margin of safety.

Reactor Pressure
Reactor Water Level
Torus Water Temperature
Torus Air Temperature
Drywell Pressure (Narrow Range)
Drywell Pressure (Wide Range)
Drywell Temperature
Neutron Monitoring
Drywell to Suppression Chamber Differential Pressure

5. Upon further review of the proposed Dresden TSUP, ComEd has identified a discrepancy with respect to the proposed Channel Calibration frequencies for the Post Accident Monitoring Instrumentation. This discrepancy impacts the following proposed Dresden Post Accident Instrumentation surveillance frequencies, which will require resolution an "Open Item Resolution" submittal. This discrepancy will be considered an **OPEN ITEM.**

Reactor Pressure
Reactor Water Level
Torus Water Temperature
Torus Water Level Indicator - Wide Range
Drywell Pressure (Narrow Range)
Drywell Pressure (Wide Range)
(Source Range) Neutron Monitoring
Main Steam Relief Valve Position Indication - Acoustic Monitor
Main Steam Safety Valve Position Indication - Acoustic Monitor

6. Dresden CTS Table 4.2.4 and Quad Cities CTS Table 4.2-2 modify various requirements with table notes. These table notes have been relocated and revised, consistent with the format and content of table notes for BWR-STS Table 4.3.7.5-1. The proposed actions are consistent with BWR-STS and CTS, except as described below.

i. Quad Cities CTS Table 4.2-2, note "*" modifies the minimum channel requirement column and states that the instrument channels are required during power operation.

This has been incorporated into TSUP Table 4.2.F-1, column 4, "Applicable Operational Modes." This is an administrative enhancement of CTS, and not a relaxation of CTS.

ii. Dresden CTS Table 4.2.4, note (1) provides the calibration requirement for the Main Steam Relief Valve and Safety Valve Position Indicators - Acoustic Monitors. This has been incorporated into TSUP Table 4.2.F-1, column 3. This is an administrative enhancement of CTS, and not a relaxation of CTS.

Dresden CTS Table 4.2.4, note (1) and Quad Cities CTS Table 4.2-2, note "**" also describe the functional test requirements for the Main Steam Relief Valve and Safety Valve Position Indicators - Acoustic Monitors. This has not been retained in TSUP. The justification for deletion of this note and requirement is provided in item M.1.ii above.

iii. Dresden CTS Table 4.2.4, note (2) and Quad Cities CTS Table 4.2-2, note "***" modify the calibration frequency by clarifying the calibration method for the Drywell Radiation Monitor. This has been relocated to TSUP Table 4.2.F-1, note (b). This is an administrative enhancement of CTS, and not a relaxation of CTS.

iv. TSUP Table 4.2.F-1 incorporates BWR-STS Table 4.3.7.5-1 note "*" as proposed note (a). This note modifies the calibration frequency for the Drywell Hydrogen Concentration Analyzer and Monitor. The proposed note provides clarifying information related to the calibration standard used for the instrument calibration. The proposed note is an enhancement of CTS, and not a relaxation of CTS.

v. TSUP Table 4.2.F-1 includes an additional note (c), which modifies the Neutron Monitor calibration frequency by clarifying the calibration method. The proposed note states that the neutron detectors may be excluded from the channel calibration. The neutron detectors are excluded from the channel calibration because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. In addition, detector failure will cause a total loss of signal, rather than instrument drift to a wrong indication. The proposed note is an enhancement of the CTS, and not a relaxation of CTS.

Questions on Sections 3/4.2

1. In reference to Actions 20 through 24 in proposed Technical Specification Table 3.2.A-1, indicate the relationship of these action statements to those specified in current Dresden Unit 3 Technical Specification Table 3.2.1 and justify any proposed actions which may represent a relaxation of the current Technical Specifications.

   This is discussed in response to Generic Question #2, item J.5 above.

2. Identify whether the Minimum CHANNEL(s) per TRIP SYSTEM operability requirements for the main steam line isolation-tunnel temperature high functional unit and the high pressure coolant injection-steam flow high functional unit represent relaxations of the current Dresden Station Technical Specifications.

   This is discussed in response to Generic Question #2, items J.3.ii, J.3.iii, and Comparison Matrix A-1.

3. Indicate whether or not the following proposed Technical Specifications (from TSUP Table 3.2.A-1) are represented in the current Dresden Station Technical Specifications: Secondary Containment Isolation on reactor vessel water level low (2a.), drywell pressure high (2b.), and reactor building ventilation exhaust radiation high (2c.); High Pressure Coolant Injection Isolation on reactor vessel pressure low (6b.); and Shutdown Cooling Isolation on reactor vessel water level low (7a.) and recirculation line water temperature high (7b.).

   This is discussed in response to Generic Question #2, items J., J.6, Comparison Matrix A-1, and Comparison Matrix A-3.

4. With regard to proposed Technical Specification Table 3.2.A-1 note (g) on the establishment of main steamline isolation trip setpoints due to high tunnel radiation with and without the addition of hydrogen to the feedwater, should hydrogen injection capability for unit 2 be lost during operation, what procedures and requirements would exist for the establishment of different trip setpoints given the change in operating conditions postulated above?

   This is discussed in response to Generic Question #2, item J.7.vii and Comparison Matrix A-4.

5. Assess the following observation generic to most sections of proposed Technical Specifications 4.2.; the testing of logic systems appears to be established on an 18 month basis in most cases while the required interval in the current Technical Specifications may not be as clearly defined. Identify the requirements for current logic system functional testing associated with the instrumentation and trip systems addressed in proposed Technical Specification sections 3/4.2 and compare these requirements with the proposed requirements.

   This is discussed in response to Generic Question #2, items H.1, H.2, and I. above

6. Identify the surveillance requirements established under the current Dresden Station Technical Specifications for the following functional units given in proposed Technical Specification Table 4.2.A-1: reactor vessel water level low (1a., 2a., 4b., 7a.), reactor building ventilation exhaust radiation high (2c.), drywell radiation high (1c.), standby liquid control system initiation (4a.), and recirculation line water temperature high (7b.).

   This is discussed in response to Generic Question #2, item M.5, Comparison Matrix A-5 and A-6.

7. Address whether or not the proposed channel calibration frequencies for the following functional units from Table 4.2.A-1 represent a relaxation when compared to the current Technical Specifications: refueling floor radiation high, main steamline tunnel radiation high, main steamline flow high.

   This is discussed in response to Generic Question #2, Item M. and Comparison Matrix A-5.

8. Identify whether the alarm setting mentioned in current Dresden Station Technical Specification Table 3.2.1. note 6. is included within the scope of the proposed Technical

Specifications.

This is discussed in response to Generic Question #2, item J.7.vi above.

9. From proposed Technical Specification Tables 3.2.B-1 and 4.2.B-1, identify the location of any channel operability requirements and surveillance frequencies within the current Technical Specifications for the following functional units: core spray pump discharge flow low (bypass) (1d.), low pressure coolant discharge flow low (bypass) (2d.), condensate storage tank level low (3c.), suppression chamber water level high (3d.), reactor vessel water level high (trip) (3e.), and high pressure coolant injection pump discharge flow low (bypass) (3f.).

   This is discussed in response to Generic Question #2, item K.12 and Comparison Matrix B-3.

10. Identify whether or not the modification in the trip setpoints for the core spray and low pressure injection pump discharge pressures (proposed Technical Specification Table 3.2.B-1 4e., 4f., 5e., 5f.), represent a relaxation of the current Technical Specifications for Dresden Station and if so provide justification.

    This is discussed in response to Generic Question #2, item K.8 and Comparison Matrix B-3.

11. Identify and justify whether actions 30 through 36 associated with Table 3.2.B-1 in the proposed Technical Specifications are a relaxation of current Technical Specification action requirements for the associated functional units.

    This is discussed in response to Generic Question #2, item K.11 above.

12. Identify, with reference to notes B.7. and B.18. in Attachment 2, the items being mentioned as Table 3.2.B-1 2.e, 2.f, and 2.g; and Table 4.2.B-1 2.e, 2.f, 2.g, and 2.h. These items do not appear in the Tables contained in Attachment 3.

    Notes B.7 and B.18 were inadvertently included in Attachment 2. As such, the information in B.7 and B.18 is not applicable. ComEd apologizes for any inconvenience that this may have caused.

13. Clarify the justification for proposed Technical Specification 3.2.B. Action 3. on the Automatic Depressurization System and address any plant-specific issues relevant to Dresden Station.

    This is discussed in response to Generic Question #2, item B.2 above.

14. Identify for proposed Table 4.2.B-1 whether the channel calibration frequency for the core spray and low pressure coolant injection discharge low (bypass) functional units represents a relaxation from the current Dresden Technical Specifications.

    This is discussed in response to Generic Question #2, item M.5 and Comparison Matrix A-6.

15. Explain the similarities and differences between the channel check frequencies for the emergency bus undervoltage functional units proposed in Table 4.2.B-1 and the instrument

check frequencies as given in current Technical Specification Table 4.2.1.

This is discussed in response to Generic Question #2, item M.1.i and Comparison Matrix A-5.

16. In evaluating proposed Technical Specifications 3.2.C. action 2. (in particular the clause concerning "both TRIP SYSTEM(S)") and action 3.a., identify what timeclocks the current Technical Specifications would impose for these conditions and provide justification if the proposed specifications involve a relaxation.

    This is discussed in response to Generic Question #2, item B.8.ii above.

17. Concerning the channel calibration of the reactor vessel pressure high functional unit for the actuation of the isolation condenser (proposed Table 4.2.D-1), identify if this is a relaxation of current Technical Specifications for Dresden Station and if so justify.

    This is discussed in response to Generic Question #2, item I.2 above.

18. Examine the action requirements of current Dresden Technical Specification 3.2.C.2 on control rod block instrumentation and evaluate proposed Technical Specification Table 3.2.E-1 action 51 to determine whether or not this is a relaxation and justify as appropriate.

    This is discussed in response to Generic Question #2, item L.5 and Comparison Matrix C-2.

19. Identify where in the current Technical Specifications information on the inoperative functional units for the rod block monitors, average power range monitors, source range monitors, and intermediate range monitors is located (proposed Technical Specification Tables 3.2.E-1 and 4.2.E-1).

    This is discussed in response to Generic Question #2, item L.6 and Comparison Matrix C-3.

20. Concerning proposed Table 3.2.E-1 note (i) and 3.2.G. note (b), provide additional information to justify the incorporation of this contingency which is not included in the current Technical Specifications.

    This is discussed in response to Generic Question #2, item L.7.xi and Comparison Matrix C-4.

21. Action 60 from proposed Technical Specification Table 3.2.F-1 on accident monitoring information appears to provide for a relaxation of the action requirement from the current Technical Specifications. Examine these statements and provide additional justification as appropriate.

    This is discussed in response to Generic Question #2, item N.6.

22. The minimum number of operable channels for drywell air temperature monitoring appears to have been reduced in the proposed Technical Specifications (Table 3.2.F-1 7.) from the number required in current Technical Specification Table 3.2.6. Address this issue and

provide justification as appropriate. Additionally, indicate where in the proposed Technical Specification the requirements for narrow range torus water level indication, torus pressure, and torus to drywell differential pressure (from Table 3.2.6) are captured.

This is discussed in response to Generic Question #2, item N.5 and Comparison Matrix D-1.

23. In comparing proposed Technical Specification Table 4.2.F-1 and current Technical Specification Table 4.2.4, indicate whether or not the following surveillance requirements are relaxations and if so provide justification as necessary. For example, examine channel check and channel calibration frequencies between the current TS and the proposed TS and note deviations.

Reactor Vessel Pressure	Channel Check	Channel Calib.
Reactor Vessel Water Level	Channel Check	Channel Calib.
Torus Water Level - Narrow Range	Channel Check	Channel Calib.
Torus Water Level - Wide Range		Channel Calib.
Drywell Pressure - Narrow Range	Channel Check	Channel Calib.
Drywell Air Temperature	Channel Check	
Torus Water Temperature	Channel Check	Channel Calib.
Torus Water Level - Wide Range		Channel Calib.
Acoustic SRV Position Indicators		Channel Calib.
Neutron Monitors	Channel Check	Channel Calib.

This is discussed in response to Generic Question #2, items O.2, O.4, and Comparison Matrix D-2.

24. Indicate where in the current Technical Specifications information related to the Drywell Hydrogen Concentration - Analyzer and Monitor is located (proposed Technical Specification Table 4.2.F-1 8.).

This is discussed in response to Generic Question #2, Comparison Matrix D-1.

Comp[redacted]n Matrix A-1 **ISOLATION ACTUATI[redacted]STRUMENTATION**

Dresden CTS Table 3.2.1
Quad Cities Table 3.2-1
TSUP Table 3.2.A-1

CTS Instrument	TSUP Item No(s).	CTS Modes	TSUP Modes	CTS Min. Channels per Trip System	TSUP Min. Channels per Trip System	CTS Setpoint	TSUP Setpoint	CTS Action	TSUP Actions	TSUP Functional Unit
Reactor Low Water Level	1.a, 2.a, 4.b	1, 2, 3	1, 2, 3 and *	2	2	> 144" above TAF	≥ 144" above TAF	A	20, 23, 24,	Reactor Vessel Water Level - Low
Reactor Low Low Water	3.a	1, 2, 3	1, 2, 3	2	2	≥ 84" above TAF	≥ 84" above TAF	A	21	Reactor Vessel Water Level - Low Low
High Drywell Pressure	1.b, 2.b	1, 2, 3	1, 2, 3	2	2	≤ 2 psig (D); ≤ 2.5 psig (Q)	≤ 2 psig (D); ≤ 2.5 psig (Q)	A	20, 24	Drywell Pressure - High
High Flow Main Steam Line	3.d	1, 2, 3	1, 2, 3	2/line (D); 8 (Q)	2/line	≤ 120% (D); ≤ 140% (Q)	≤ 120% (D); ≤ 140% (Q)	B	21	MSL Flow - High
High Temperature Main Steamline Tunnel	3.e	1, 2, 3	1, 2, 3	2/line (D); 8 (Q)	**OPEN ITEM**	≤ 200° F	≤ 200° F	B	21	MSL Tunnel Temperature - High
High Radiation Main Steamline Tunnel	3.b	1, 2, 3	1, 2, 3	2	2	≤ 3x FPB (D); ≤ 15x FPB (Q)	≤ 3x FPB (D); ≤ 15x FPB (Q)	B	21	MSL Tunnel Radiation - High
Low Pressure Main Steamline	3.c	1, 2, 3	1	2	2	≥ 850 psig (D); ≥ 825 psig (Q)	≥ 825 psig	B	22	MSL Pressure - Low
High Flow Isolation Condenser Line Steamline Side (Dresden CTS and TSUP only)	5.a	1, 2, 3	1, 2, 3	1	1	≤ 300% flow rated steam flow	≤ 300% flow rated steam flow	C	23	(Isolation Condenser) Steam Flow - High
High Flow Isolation Condenser Condensate Return Side (Dresden CTS and TSUP only)	5.b	1, 2, 3	1, 2, 3	1	1	≤ 32" (Unit 2); ≤ 14.8" (Unit 3)	≤ 32" (Unit 2); ≤ 14.8" (Unit 3)	C	23	(Isolation Condenser) Return Flow - High
High Flow RCIC Steamline (Quad Cities CTS and TSUP only)	5.a	1, 2, 3	1, 2, 3	1	1	≤ 300% flow rated steam flow	≤ 300% flow rated steam flow	C	23	(Reactor Core Isolation Cooling) Steam Flow - High
RCIC Turbine Area High Temperature (Quad Cities CTS and TSUP only)	5.c	1, 2, 3	1, 2, 3	2	2	≤ 170° F	≤ 170° F	C	23	(Reactor Core Isolation Cooling) Area Temperature - High
High Flow HPCI Steamline	6.a	1, 2, 3	1, 2, 3	1	1	≤ 300% flow rated steam flow	≤ 300% flow rated steam flow	D	23	(High Pressure Coolant Injection) Steam Flow - High
High Temperature HPCI Steamline Area	6.c	1, 2, 3	1, 2, 3	4 (D); 2 (Q)	8 (D); 2 (Q)	≤ 200° F (D); ≤ 170° F (Q)	≤ 200° F (D); ≤ 170° F (Q)	D	23	(High Pressure Coolant Injection) Area Temperature - High
HPCI Steamline pressure (Quad Cities CTS only; Dresden and Quad Cities TSUP)	6.b	1, 2, 3	1, 2, 3	2	2	≥ 100 psig (Quad Cities CTS only)	≥ 80 psig (D); > 100 psig (Q)	D	23	(High Pressure Coolant Injection) Reactor Vessel Pressure - Low

Comp[redacted]n Matrix A-2
Dresden CTS Table 3.2.1
Quad Cities Table 3.2-1
TSUP Table 3.2.A-1

ISOLATION ACTUATIO[redacted]STRUMENTATION ACTIONS

CTS Instrument	CTS Action	CTS	TSUP	TSUP Action	TSUP Functional Unit
Reactor Low Water Level	A	Initiate shutdown - Cold Shutdown in 24 hours	Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours	20	Reactor Vessel Water Level - Low (Primary Containment Isolation)
			Close affected valves in 1 hour and declare system inoperable.	23	Reactor Vessel Water Level - Low (Reactor Water Cleanup System Isolation; RHR Shutdown Cooling Isolation)
			Establish Secondary Containment with SBGT operating in 1 hour.	24	Reactor Vessel Water Level - Low (Secondary Containment Isolation)
Reactor Low Low Water	A	Initiate shutdown - Cold Shutdown in 24 hours	Startup with associated isolation valves closed in 8 hours, and Cold Shutdown in next 24 hours	21	Reactor Vessel Water Level - Low Low
High Drywell Pressure	A	Initiate shutdown - Cold Shutdown in 24 hours	Hot Shutdown in 12 hours and Cold Shutdown in the next 24 hours	20	Drywell Pressure - High (Primary Containment Isolation)
			Establish Secondary Containment with SBGT operating in 1 hour.	24	Drywell Pressure - High (Secondary Containment Isolation)
High Flow Main Steam Line	B	Initiate load reduction - Hot Standby in 8 hours	Startup with associated isolation valves closed in 8 hours, and Cold Shutdown in next 24 hours	21	MSL Flow - High
High Temperature Main Steamline Tunnel	B	Initiate load reduction - Hot Standby in 8 hours	Startup with associated isolation valves closed in 8 hours, and Cold Shutdown in next 24 hours	21	MSL Tunnel Temperature - High
High Radiation Main Steamline Tunnel	B	Initiate load reduction - Hot Standby in 8 hours	Startup with associated isolation valves closed in 8 hours, and Cold Shutdown in next 24 hours	21	MSL Tunnel Radiation - High
Low Pressure Main Steamline	B	Initiate load reduction - Hot Standby in 8 hours	Startup within 8 hours	22	MSL Pressure - High
High Flow Isolation Condenser Line Steamline Side (Dresden CTS and TSUP only)	C	Close applicable system isolation valves	Close affected valves in 1 hour and declare system inoperable.	23	(Isolation Condenser) Steam Flow - High
High Flow Isolation Condenser Condensate Return Side (Dresden CTS and TSUP only)	C	Close applicable system isolation valves	Close affected valves in 1 hour and declare system inoperable.	23	(Isolation Condenser) Return Flow - High
High Flow RCIC Steamline (Quad Cities CTS and TSUP only)	C	Close applicable system isolation valves	Close affected valves in 1 hour and declare system inoperable.	23	(Reactor Core Isolation Cooling) Steam Flow - High
RCIC Turbine Area High Temperature (Quad Cities CTS and TSUP only)	C	Close applicable system isolation valves	Close affected valves in 1 hour and declare system inoperable.	23	(Reactor Core Isolation Cooling) Area Temperature - High
High Flow HPCI Steamline	D	Close HPCI Isolation Valves	Close affected valves in 1 hour and declare system inoperable.	23	(High Pressure Coolant Injection) Steam Flow - High
High Temperature HPCI Steamline Area	D	Close HPCI Isolation Valves	Close affected valves in 1 hour and declare system inoperable.	23	(High Pressure Coolant Injection) Area Temperature - High
HPCI Steamline pressure (Quad Cities CTS only; Dresden and Quad Cities TSUP)	D	Close HPCI Isolation Valves	Close affected valves in 1 hour and declare system inoperable.	23	(High Pressure Coolant Injection) Reactor Vessel Pressure Low

Comparison Matrix A-3
Dresden CTS Table 3.2.1
Quad Cities Table 3.2-1
TSUP Table 3.2.A-1

ISOLATION ACTUATION INSTRUMENTATION
ADDITIONAL
FUNCTIONAL UNITS

TSUP Isolation Function	TSUP Functional Unit	TSUP Applicable Modes	BWR-STS Applicable Modes	TSUP Minimum Channels per Trip System	BWR-STS Minimum Channels per Trip System	TSUP Action	BWR-STS Action	BWR-STS Item No.
Primary Containment Isolation	(1.c) Drywell Radiation - High	1, 2, 3	1, 2, 3	2	2	20	20	1.c
Secondary Containment Isolation	(2.c) Reactor Building Ventilation Exhaust Radiation - High	1, 2, 3, and **	1, 2, 3, and *	2	2	24	26	2.c
	(2.d) Refueling Floor Radiation - High	1, 2, 3, and **	1, 2, 3, and *	2	2	24	26	2.e
Reactor Water Cleanup System Isolation	(4.a) Standby Liquid Control System Initiation	1, 2, 3	1, 2, 3	NA	NA	23	23	4.d
RCIC system Isolation	(5.b) Reactor Vessel Pressure - Low (RCIC - Quad Cities only)	1, 2, 3	1, 2, 3	2	4	23	23	5.b
Shutdown Cooling Isolation (Dresden)	(7.a) Reactor Vessel Water Level - Low	3, 4, 5	1, 2, 3	2	2	23	27	7.a
	(7.b) Recirculation Line Water Temperature - High (Cut-in Permissive)	1, 2, 3	1, 2, 3	2	1	23	27	7.b
RHR Shutdown Cooling Mode Isolation (Quad Cities)	(7.a) Reactor Vessel Water Level - Low	3, 4, 5	1, 2, 3	2	2	23	27	7.a
	(7.b) Reactor Vessel Pressure - High (Cut-in Permissive)	1, 2, 3	1, 2, 3	2	1	23	27	7.b

Comparison Matrix A-4
Dresden CTS Table 3.2.1
Quad Cities Table 3.2-1
TSUP Table 3.2.A-1

ISOLATION ACTUATION INSTRUMENTATION TABLE NOTATION

Dresden CTS Note	Quad Cities CTS Note	TSUP Table 3.2.A-1 Note	TSUP Other
1	1	Relocated	3.2.A, Actions 2 and 3; TSUP Table 3.2.A-1, column 4, item 3.c
2	n/a	Relocated	TSUP Table 3.2.A-1, column 3, item 3.d
3	2	Relocated	3.2.A, Actions 2 and 3
3.A (Action)	2.A (Action)	Relocated	See Comparison Matrix A-2
3.B (Action)	2.B (Action)	Relocated	See Comparison Matrix A-2
3.C (Action)	2.C (Action)	Relocated	See Comparison Matrix A-2
3.D (Action)	2.D (Action)	Relocated	See Comparison Matrix A-2
4	3	(d)	n/a
5	n/a	Deleted	n/a
6	n/a	Deleted	n/a
7	n/a	(g) - Dresden; (h) - Quad Cities	TSUP Table 2.2.A-1, note (b)
8	7	(h) - Dresden; (i) - Quad Cities	n/a
9	•	(i) - Dresden; (j) - Quad Cities	n/a
n/a	4	Relocated	TSUP Table 3.2.A-1, column 4, item 3.c
n/a	5	(k)	n/a
n/a	6	(b)	n/a
n/a	n/a	•	n/a
n/a	n/a	••	n/a
n/a	n/a	(a)	n/a
n/a	n/a	(c)	n/a
n/a	n/a	(e)	n/a
n/a	n/a	(f)	n/a

Comparison Matrix A-5
Dresden CTS Table 4.2.1
Quad Cities Table 4.2-1

ISOLATION, ECCS, ROD BLOCK SURVEILLANCE REQUIREMENTS

CTS Function	TSUP Item Nos.	TSUP Function	Channel Check	Channel Functional Test	Channel Calibration
ECCS Instrumentation					
Reactor Low Low Water	Table 4.2.B-1; 1.a, 2.a, 3.a, 4.a	Reactor Vessel Water Level - Low Low	D/Q - Daily; TSUP - S	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
High Drywell Pressure	Table 4.2.B-1; 1.b, 2.b, 3.b, 4.b	Drywell Pressure - High	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
Reactor Low Pressure	Table 4.2.B-1; 1.c, 2.c	Reactor Vessel Pressure - Low (Permissive)	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
Containment Spray Interlock - 2/3 core height	Table 4.2.I-1; item 2	Reactor Vessel Water Level - Low (Permissive)	D/Q - None; TSUP - D	D/Q - M; TSUP - M	(Analog Trip Units/Transmitters) D/Q - M/R; TSUP - M/E
Containment Spray Interlock - Containment High Pressure	Table 4.2.I-1; item 1	Reactor Vessel Pressure - Low (Permissive)	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
Low Pressure Core Cooling Pump Discharge	Table 4.2.B-1; 4.e, 4.f	CS (LPCI) Pump Discharge Pressure	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
Undervoltage Emergency Bus	Table 4.2.B-1; item 5.a	4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	D - Q, Q - None; TSUP - N/A	D/Q - R; TSUP - E	D/Q - R; TSUP - E
Sustained High Reactor Pressure (Dresden only)	Dresden TSUP Table 4.2.D-1	Reactor Vessel Pressure - High	D - None; TSUP - N/A	D - M; TSUP - M	**OPEN ITEM**
Degraded Voltage Emergency Bus	Table 4.2.B-1; item 5.b	4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	D/Q - M; TSUP - N/A	D/Q - R; TSUP - E	D/Q - R; TSUP - E
Rod Blocks					
APRM Downscale	Table 4.2.E-1; 2.c	APRM Downscale	D/Q - None; TSUP - N/A	D/Q - M; TSUP - S/U, M	**D - OPEN ITEM**; Q - Q, TSUP - SA
APRM Flow Variable	Table 4.2.E-1; 2.a.1, 2.a.2	APRM Flow Biased Neutron Flux - High	D/Q - None; TSUP - N/A	D/Q - M; TSUP - S/U, M	D/Q - R; TSUP - SA
APRM upscale (Startup/Hot Standby) - (Dresden only)	Table 4.2.E-1; 2.d	APRM Startup Neutron Flux - High	D - W or D; TSUP - N/A	D - S/U; TSUP - S/U, M	D - S/U & S/D; TSUP - SA
IRM upscale	Table 4.2.E-1; 4.b	IRM Upscale	D - W or D, Q - None; TSUP - N/A	D/Q - S/U; TSUP - S/U, W	D/Q - S/U & S/D; TSUP - SA
IRM downscale	Table 4.2.E-1; 4.d	IRM Downscale	D - W or D, Q - None; TSUP - N/A	D/Q - S/U; TSUP - S/U, W	D/Q - S/U & S/D; TSUP - SA
IRM detector not in Startup sition (not fully inserted in e Core)	Table 4.2.E-1; 4.a	IRM Detector not full in	D/Q - None; TSUP - N/A	D/Q - S/U; TSUP - S/U, W	**OPEN ITEM**
RBM Upscale	Table 4.2.E-1; 1.a	Rod Block Monitor Upscale	D/Q - None; TSUP - N/A	D/Q - M; TSUP - S/U, M	D/Q - R; TSUP - Q
RBM Downscale	Table 4.2.E-1; 1.c	Rod Block Monitor Downscale	D/Q - None; TSUP - N/A	D/Q - M; TSUP - S/U, M	D/Q - Q; TSUP - Q
SRM upscale	Table 4.2.E-1; 3.b	SRM Upscale	D/Q - None; TSUP - N/A	D/Q - S/U; TSUP - S/U, W	**D - OPEN ITEM**; Q - S/U & S/D, TSUP - E
SRM detector not in Startup position	**OPEN ITEM**				
SRM downscale (Quad Cities CTS; D & Q TSUP)	**OPEN ITEM**				
High Water Level in scram discharge volume (SDV)	Table 4.2.E-1; 5.a	Scram Discharge Volume Water Level - High	D/Q - None; TSUP - N/A	D/Q - Q; TSUP - Q	D/Q - None; TSUP - N/A
SDV high water level scram trip bypassed (Quad Cities only)	Table 4.2.E-1; 5.b	SDV Switch in Bypass	D/Q - None; TSUP - N/A	**OPEN ITEM**	Q - None; TSUP - N/A
Main Steamline Isolation					
Steam Tunnel High Temperature	Table 4.2.A-1; 3.e	High Temperature Main Steamline Tunnel	D/Q - None; TSUP - N/A	D/Q - R; TSUP - E	D/Q - R; TSUP - E
Steamline High Flow	Table 4.2.A-1; 3.d	High Flow Main Steam Line	D/Q - D; TSUP - S	D/Q - M; TSUP - M	**D - OPEN ITEM**; Q - Q; TSUP - E
Steamline low pressure	Table 4.2.A-1; 3.c	Low Pressure Main Steamline	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	D/Q - Q; TSUP - Q
Steamline High Radiation	Table 4.2.A-1; 3.b	High Radiation Main Steamline Tunnel	D/Q - D; TSUP - S	D/Q - M; TSUP - M	**OPEN ITEM**
Reactor Low Low Water Level (Quad Cities only)	Table 4.2.A-1; 3.a	Reactor Vessel Water Level - Low Low	Q - D; TSUP - S	Q - M; TSUP - M	(Analog Trip Units/Transmitters) D/Q - M/R; TSUP - M/E
HPCI Isolation					
Steam Line High Flow	Table 4.2.A-1, item 6.a	Steam Flow - High	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	(Analog Trip Units/Transmitters) D/Q - M/R; TSUP - M/E
Steamline Area High Temperatu	Table 4.2.A-1, item 6.c	Area Temperature - High	D/Q - None; TSUP - N/A	D/Q - R; TSUP - E	D/Q - R; TSUP - E
w Reactor Pressure	Table 4.2.A-1, item 6.b	Reactor Vessel Pressure - Low	D/Q - None; TSUP - N/A	D/Q - M; TSUP - M	(Analog Trip Units/Transmitters) D/Q - M/R; TSUP - M/E

Comparison Matrix A-5
Dresden CTS Table 4.2.1
Quad Cities Table 4.2-1

ISOLATION, ECCS, ROD BLOCK SURVEILLANCE REQUIREMENTS

CTS Function	TSUP Item Nos.	TSUP Function	Channel Check	Channel Functional Test	Channel Calibration
RCIC Isolation (Quad Cities only)					
High Flow RCIC Steamline	Table 4.2.A-1, item 5.a	(Reactor Core Isolation Cooling) Steam Flow - High	Q - None; TSUP - N/A	Q - Q; TSUP - M	Q - Q; TSUP - Q
RCIC Turbine Area High Temperature	Table 4.2.A-1, item 5.c	(Reactor Core Isolation Cooling) Area Temperature - High	Q - None; TSUP - N/A	Q - R; TSUP - E	Q - R; TSUP - E
Low Reactor Pressure	Table 4.2.A-1, item 5.b	Reactor Vessel Pressure - Low	Q - None; TSUP - N/A	Q - Q; TSUP - M	Q - Q; TSUP - Q
Isolation Condenser Isolation (Dresden only)					
High Flow Isolation Condenser Line Steamline Side	Table 4.2.A-1, item 5.a	(Isolation Condenser) Steam Flow - High	D - None; TSUP - N/A	D- M; TSUP - M	D - Q; TSUP - Q
High Flow Isolation Condenser Condensate Return Side	Table 4.2.A-1, item 5.b	(Isolation Condenser) Return Flow - High	D - None; TSUP - N/A	D- M; TSUP - M	D - Q; TSUP - Q
Containment Monitoring (Dresden CTS Table 4.2.1 only; D and Q TSUP)					
Pressure Indicator - -5 in. Hg to +5 psig	**OPEN ITEM** (for TSUP Tables 3/4.2.F-1)				
Pressure Indicator - 5 in. to + 70 in. Hg	Table 4.2.F-1; item 5	Drywell Pressure - Narrow Range	D - None; TSUP - M	D - None; TSUP - N/A	**OPEN ITEM**
Temperature	Table 4.2.F-1; item 7	Drywell Air Temperature	D - D; TSUP - M	D - None; TSUP - N/A	D - R; TSUP - E
Drywell - Torus Differential Pressure	4.7.H	Drywell - Suppression Chamber Differential Pressure	D - None; TSUP - D	D - None; TSUP - None	**OPEN ITEM**
Torus Water Level Indicator - Narrow Range	**DELETED**				
Torus Water Level - 40 in. sight glass	**DELETED**				
Safety/Relief Valve Monitoring (Dresden CTS Table 4.2.1 only; D and Q TSUP)					
Safety/Relief Valve Position Indicator (Acoustic Monitor)	TSUP Table 4.2.F-1, item 10; TSUP 4.6.F.2	Safety/Relief Valve Position Indicators	D - M; TSUP - M	D - R; TSUP - None	**OPEN ITEM**
Safety/Relief Valve Position Indicator (Temperature Monitor)	TSUP Table 4.2.F-1, item 10; TSUP 4.6.F.2	Safety/Relief Valve Position Indicators	D - M; TSUP - M	D - None; TSUP - None	D - 18 months; TSUP - E
Safety Valve Position Indicator (Acoustic Monitor)	TSUP Table 4.2.F-1, item 10; TSUP 4.6.E.1	Safety/Relief Valve Position Indicators	D - M; TSUP - M	D - R; TSUP - None	**OPEN ITEM**
SafetyValve Position Indicator (Temperature Monitor)	TSUP Table 4.2.F-1, item 10; TSUP 4.6.E.1	Safety/Relief Valve Position Indicators	D - M; TSUP - M	D - None; TSUP - None	D - 18 months; TSUP - E
Reactor Building Vent Isolation and SBGT Initiation					
Refueling Floor Radiation Monitors	TSUP Table 4.2.A-1, item 2.d	Refueling Floor Radiation - High	D/Q - D; TSUP - S	D/Q - M; TSUP - M	**D - OPEN ITEM;** Q - Q, TSUP - E
Steam Jet Air Ejector Off-Gas Isolation (Quad Cities CTS Table 4.2-1 only)	**Relocated to ODCM**				
Control Room Ventilation System Isolation (Quad Cities CTS and TSUP only)					
Reactor Low Water Level	Table 4.2.A-1; 1.a, 2.a, (4.b - TSUP RWCU Isolation)	Reactor Vessel Water Level - Low	Q- D; TSUP - S	Q - M; TSUP - M	(Analog Trip Units/Transmitters) D/Q - M/R; TSUP - M/E
Drywell High Pressure	Table 4.2.B-1; 1.b, 2.b, 3.b, 4.b; Table 4.2.A-1, 1.b, 2.b	Drywell Pressure - High	Q- None; TSUP - NA	Q - M; TSUP - M	Q - Q; TSUP - Q
Main Steamline High Flow	Table 4.2.A-1; item 3.d	MSL Flow - High	Q- D; TSUP - S	Q - M; TSUP - M	Q - Q; TSUP - E
Toxic Gas Analyzer	TSUP 4.2.K	Toxic Gas Monitoring	Q- D; TSUP - S	Q - M; TSUP - M	Q - 18 months; TSUP - E

Comparison Matrix A-6
Dresden CTS Table 4.2.1
Quad Cities Table 4.2-1

ISOLATION, ECCS, ROD BLOCK SURVEILLANCE REQUIREMENTS ADDITIONAL FUNCTIONAL UNITS

TSUP Function	TSUP Functional Unit	Channel Check	Channel Functional Test	Channel Calibration
Primary Containment Isolation	(1.c) Drywell Radiation - High	TSUP - S; BWR-STS - S	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - R
Secondary Containment Isolation	(2.c) Reactor Building Ventilation Exhaust Radiation - High	TSUP - S; BWR-STS - None	TSUP - M; BWR-STS - None	TSUP - E; BWR-STS - None
	(2.d) Refueling Floor Radiation - High	TSUP - S; BWR-STS - S	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - R
Reactor Water Cleanup System Isolation	(4.a) Standby Liquid Control System Initiation	TSUP - NA; BWR-STS - NA	TSUP - E; BWR-STS - (M) (R)	TSUP - NA; BWR-STS - NA
RCIC system Isolation	(5.b) Reactor Vessel Pressure - Low (RCIC - Quad Cities only)	TSUP - NA; BWR-STS - NA	TSUP - M; BWR-STS - M	TSUP - Q; BWR-STS - Q
Shutdown Cooling Isolation (Dresden)	(7.a) Reactor Vessel Water Level - Low	TSUP - S; BWR-STS - S	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - R
	(7.b) Recirculation Line Water Temperature - High (Cut-in Permissive)	TSUP - NA; BWR-STS - NA	TSUP - M; BWR-STS - M	TSUP - Q; BWR-STS - Q
RHR Shutdown Cooling Mode Isolation (Quad Cities)	(7.a) Reactor Vessel Water Level - Low	TSUP - S; BWR-STS - S	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - R
	(7.b) Reactor Vessel Pressure - High (Cut-in Permissive)	TSUP - NA; BWR-STS - NA	TSUP - M; BWR-STS - M	TSUP - Q; BWR-STS - Q
Core Spray Actuation	(1.d) Core Spray Pump Discharge Flow - Low (Bypass)	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - (R)
LPCI Actuation	(2.d) LPCI Pump Discharge Flow - Low (Bypass)	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - (R)
HPCI Actuation	(3.c) Condensate Storage Tank Level - Low	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - NA; BWR-STS - (R)
HPCI Actuation	(3.d) Suppression Chamber Water Level - High	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - NA; BWR-STS - (R)
Actuation	(3.e) Reactor Vessel Water Level - High Trip	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - (R)
HPCI Actuation	(3.f) HPCI Pump Discharge Flow - Low (Bypass)	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - E; BWR-STS - (R)
HPCI Actuation	(3.g) Manual Initiation	TSUP - NA; BWR-STS - NA	TSUP - E; BWR-STS -(M) (R)	TSUP - NA; BWR-STS - NA
ADS (Trip System A & B) Actuation	(4.d) Low Low Level Timer	TSUP - NA; BWR-STS - None	TSUP - E; BWR-STS - None	TSUP - E; BWR-STS - None
ADS (Trip System A & B) Actuation	(4.e) Core Spray Pump Discharge Pressure - High (Permissive)	TSUP - NA; BWR-STS - (S)	TSUP - M; BWR-STS - M	TSUP - Q; BWR-STS - (R)
Rod Block	(3.c) SRM Inoperative	TSUP - NA; BWR-STS - NA	TSUP - S/U, W; BWR-STS - S/U, W	TSUP - NA; BWR-STS - NA
Rod Block	(3.d) SRM Downscale (Dresden)	TSUP - NA; BWR-STS - NA	TSUP - S/U, W; BWR-STS - S/U, W	TSUP - E; BWR-STS - Q
Rod Block	(4.c) IRM Inoperative	TSUP - NA; BWR-STS - NA	TSUP - S/U, W; BWR-STS - S/U, W	TSUP - NA; BWR-STS - NA
Rod Block	(5.b) SDV Switch in Bypass (Dresden)	TSUP - NA; BWR-STS - NA	TSUP - M; BWR-STS - M	TSUP - NA; BWR-STS - NA

Comparison Matrix A-7
Dresden CTS Table 4.2.1
Quad Cities Table 4.2-1

ISOLATION, ECCS, ROD BLOCK SURVEILLANCE REQUIREMENTS TABLE NOTATION

Dresden CTS Note	Quad Cities CTS Note	TSUP
1	1	Deleted
2	2	Incorporated into TSUP Tables 4.2.A-1, 4.2.B-1, and 4.2.E-1, columns 2, 3, 4, and 5
3	3	Deleted
4	4	Open Item
5; Table 3.2.6, column 1	Table 3.2-4, column 1	TSUP 3.7.H.2, 3.7.H.4
6; Table 3.2.6, note 4	Table 3.2-4, note 4	TSUP 3.7.H.2, 3.7.H.4
7; Table 3.2.6, note 1	Table 3.2-4, note 1	Deleted
8; Table 3.2.6, note 2	Table 3.2-4, note 5	TSUP Table 3.2.F-1, Actions 63a and 63b
9	n/a	Deleted
10	8	Deleted
11	9	Deleted
12	10	TSUP Table 4.2.A-1, note (a); TSUP Table 4.2.B-1, note (e)
13	10	TSUP Table 4.2.A-1, note (a); TSUP Table 4.2.B-1, note (e)
n/a	5	Incorporated into TSUP Table 4.2.E-1, columns 3, 4, and 5
n/a	6	Deleted
n/a	7	Incorporated into TSUP 4.2.A.2, 4.2.B.2, and 4.2.I.2
n/a	n/a	TSUP Table 4.2.A-1, note *
n/a	n/a	TSUP Table 4.2.A-1, note **
n/a	n/a	TSUP Table 4.2.A-1, note (b); TSUP Table 4.2.B-1, note (d)
n/a	n/a	TSUP Table 4.2.A-1, note (c)
n/a	n/a	TSUP Table 4.2.B-1, notes (a), (b), and (c)
n/a	n/a	TSUP Table 4.2.E-1, note (a)
n/a	n/a	TSUP Table 4.2.E-1, note (b)
n/a	n/a	TSUP Table 4.2.E-1, note (c)
n/a	n/a	TSUP Table 4.2.E-1, note (j)

Comp[redacted] Matrix C-1 **Rod Block In[redacted]mentation**

Dresden CTS Table 3.2.3
Quad Cities Table 3.2-3
TSUP Table 3.2.E-1

CTS Instrument	TSUP Item	CTS Applicability	TSUP Appl.	CTS Min. Channels	TSUP Min. Channels	CTS Trip Level Setting	TSUP Trip Setpoint	TSUP Functional Unit
Rod Block Monitor upscale (flow bias) - Dual Loop Operation	1.a	1, 2, & ≥ 30% power	1	2	2	See Core Operating Limits Report	As specified in the COLR	Rod Block Monitor Upscale
Rod Block Monitor upscale (flow bias) - Single Loop Operation	1.a	1, 2, & ≥ 30% power	1	2	2	See Core Operating Limits Report	As specified in the COLR	Rod Block Monitor Upscale
Rod Block Monitor downscale	1.c	1	1	2	2	≥ 5/125 of full scale (Dresden); ≥ 3/125 of full scale (Quad Cities)	≥ 5/125 of full scale (Dresden); ≥ 3/125 of full scale (Quad Cities)	Rod Block Monitor Downscale
APRM upscale (flow bias) (Quad Cities)	2.a.1, 2.a.2	1	1	4	4	≤ (0.58W_D + 50) * (FRP/MFLPD)	≤ (0.58W + 50)	APRM Flow Biased Neutron Flux - High Dual Recirculation Loop Operation
APRM upscale (flow bias) Dual Loop Operation (Dresden)	2.a.1	1	1	4	4	≤ (0.58W_D + 50) / FDLRC	≤ (0.58W + 50)	APRM Flow Biased Neutron Flux - High Dual Recirculation Loop Operation
APRM upscale (flow bias) Single Loop Operation (Dresden)	2.a.2	1	1	4	4	≤ (0.58W_D + 46.5) / FDLRC	≤ (0.58W + 46.5)	APRM Flow Biased Neutron Flux - High Single Recirculation Loop Operation
APRM Downscale	2.c	1	1	4	4	≥ 3/125 of full scale	≥ 3/125 of full scale	APRM Downscale
APRM upscale (Refuel and Startup/Hot Standby Mode)	2.d	2, 5	2, 5	4	4	≤ 12/125 of full scale	≤ 12/125 of full scale	APRM Startup Neutron Flux - High
SRM detector not in Startup position	**OPEN ITEM**							
SRM upscale	3.b	2	2, 5	4	3 - Mode 2; 2 - Mode 5	≤ 10^5 counts/sec.	≤ 1 x 10^5 counts/sec	SRM Upscale
SRM downscale (Quad Cities)	**OPEN ITEM**							
IRM detector not in Startup position	4.a	2 (Dresden) 2, 5 (Quad Cities)	2, 5	6	6	NA (Dresden); ≥ 2 feet below core centerline (Quad Cities)	NA	IRM Detector not full in
IRM upscale	4.b	2	2, 5	6	6	≤ 108/125 of full scale	≤ 108/125 of full scale	IRM Upscale
IRM downscale	4.d	2	2, 5	6	6	≥ 5/125 of full scale (Dresden); ≥ 3/125 of full scale (Quad Cities)	≥ 5/125 of full scale (Dresden); ≥ 3/125 of full scale (Quad Cities)	IRM Downscale
High Water Level in scram discharge volume (SDV)	5.a	1, 2	1, 2, 5	1 per bank	1 per bank	(LT/E) 26 inches above the bottom of the instrument volume (Dresden); ≤ 25 gallons (per bank) (Quad Cities)	< 25 gallons	Scram Discharge Volume Water Level - High
SDV high water level scram trip bypassed (Q - CTS, D/Q - TSUP)	5.b	1, 2	**OPEN ITEM**	1	1	NA	NA	SDV Switch in Bypass

Comp[redacted] Matrix C-2
Dresden [redacted] Table 3.2.3
Quad Cities Table 3.2-3
TSUP Table 3.2.E-1

Rod Block In[redacted]mentation Actions

CTS Instrument	TSUP Item No(s).	Dresden CTS Action "For systems with > 1 channel per trip system, if min. channel requirement cannot be met for...:"	Quad Cities CTS Action "For systems with > 1 channel per trip system, if min. channel requirement cannot be met for...:"	TSUP Action Number	TSUP Action
Rod Block Monitor upscale (flow bias) - Dual Loop Operation	1.a	"... both trip systems: - trip both trip systems."	" one trip system, condition may exist for 7 days - functional test operable trip system immediately and daily, after 7 days, trip system; both trip systems: - trip both systems."	50	Declare RBM inoperable and take action requd. by Specification 3.3.M
Rod Block Monitor upscale (flow bias) - Single Loop Operation	1.a	See above	See above	50	Declare RBM inoperable and take action requd. by Specification 3.3.M
Rod Block Monitor downscale	1.c	See above	See above	50	Declare RBM inoperable and take action requd. by Specification 3.3.M
					"With the number of operable channels:
APRM upscale (flow bias) (Quad Cities)	2.a.1, 2.a.2	See above	See above	51	one less than required per Trip Function requirement - restore to operable status in 7 days, or trip channel in one hour; $\geq$ 2 less - trip at least one channel in one hour."
APRM upscale (flow bias) Dual Loop Operation (Dresden)	2.a.1	See above	See above	51	See above
APRM upscale (flow bias) Single Loop Operation (Dresden)	2.a.2	See above	See above	51	See above
APRM Downscale	2.c	See above	See above	51	See above
APRM upscale (Refuel and Startup/Hot Standby Mode)	2.d	See above	See above	51	See above
SRM detector not in Startup position	3.a	**OPEN ITEM**			
SRM upscale	3.b	See above	See above	51	See above
SRM downscale (Quad Cities)	3.d	**OPEN ITEM**			
IRM detector not in Startup position	4.a	See above	See above	51	See above
IRM upscale	4.b	See above	See above	51	See above
IRM downscale	4.d	See above	See above	51	See above
High Water Level in scram discharge volume (SDV)	5.a	See above	See above	52	"With the number of operable channels less than required - trip channel in one hour."
SDV high water level scram trip bypassed (Quad Cities)	5.b	See above	See above	52	See above

Comparison Matrix C-3
Dresden CTS Table 3.2.3
Quad Cities Table 3.2-3
TSUP Table 3.2.E-1

Rod Block Instrumentation
Additional Functional Units

TSUP Control Rod Block Function	TSUP Applicable Modes	BWR-STS Applicable Modes	TSUP Min. Channels per Trip Function	BWR-STS Min. Channels per Trip Function	TSUP Action	BWR-STS Action	BWR-STS Item No. Table 3.3.6-1, Item#	
SRM Inoperative	2, 5	2, 5	3 - Mode 2 2 - Mode 5	3 - Mode 2 2 - Mode 5	51	61	3.c	
SRM Downscale (Dresden TSUP)	**OPEN ITEM**							
IRM Inoperative	2, 5	2, 5	6	6	51	61	4.c	
SDV Switch in Bypass (Dresden TSUP)	**OPEN ITEM**	(1, 2), and 5	1	(2)	52	62	5.b	
APRM Inoperative	1, 2, 5 ($\geq$ 30% Power)	1, 2, 5	4	4	51	61	2.b	

Comparison Matrix C-4
Dresden CTS Table 3.2.3
Quad Cities Table 3.2-3
TSUP Table 3.2.E-1

Rod Block Instrumentation Table Notation

Dresden CTS Note	Quad Cities CTS Note	TSUP Table 3.2.E-1 Note	TSUP Other
1	1	(a)	TSUP Table 3.2.E-1, Columns 3 and 4; Actions 51 and 52;
2	2	(h)	n/a
3	3	(e)	TSUP Table 4.2.E-1, note (i)
4	4	**(b) - OPEN ITEM**	**TSUP Table 4.2.E-1, note (f) - OPEN ITEM**
5	5	Relocated	TSUP Table 3.2.E-1, Column 3
6	6	(c)	TSUP Table 4.2.E-1, note (g)
7	7	Relocated	TSUP 3.12.A
n/a	8	Relocated	TSUP Table 3.2.E-1, Column 3
n/a	9	Deleted	n/a
n/a	10	Relocated	TSUP Table 3.2.E-1, Column 2
n/a	n/a	**(d) - OPEN ITEM**	**TSUP Table 4.2.E-1, note (h) - OPEN ITEM**
n/a	n/a	(f)	TSUP Table 4.2.E-1, note (d)
n/a	n/a	(g)	TSUP Table 4.2.E-1, note (e)
n/a	n/a	(h)	n/a
n/a	n/a	**(i) - OPEN ITEM**	**n/a - OPEN ITEM**
n/a	n/a	(j)	TSUP Table 4.2.E-1, note (k)

Comp[redacted] Matrix D-1

Dresden [redacted] Table 3.2.6

Quad Cities Table 3.2-4

TSUP Table 3.2.F-1

Post Accident Monit[redacted] Instrumentation

CTS Instrument	TSUP Item No(s).	CTS Applicable Modes	TSUP Applicable Modes	CTS Minimum Channels	TSUP Minimum Channels	CTS Channels - No. Provided	TSUP Required Channels	TSUP Functional Unit
Reactor Pressure	1	1, 2	1, 2	1	1	D - 4; Q - 3	2	Reactor Vessel Pressure
Reactor Water Level	2	1, 2	1, 2	1	1	2	2	Reactor Vessel Water Level
Torus Water Temperature	4	1, 2	1, 2	1	1	2	2	Torus Water Temperature
Torus Air Temperature (Quad Cities CTS and TSUP only)	13	1, 2	1, 2	1	1	2	2	Torus Air Temperatue
Torus Water Level Indicator - Narrow Range	DELETED							
Torus Water Level Indicator - Wide Range	3	1, 2	1, 2	2 Total (Narrow and Wide Range)	1	2	2	Torus Water Level - Wide Range
Torus Water Level - Local Sight Glass	DELETED							
Torus Pressure	OPEN ITEM							
Drywell Pressure (-5 in. Hg to +5 psig)	6	1,2	1,2	2 Total (Narrow and Wide Range)	1 Total (Narrow Range)	1	2 Total (Narrow Range)	Drywell Pressure - Narrow Range
Drywell Pressure (-10 in. Hg to +70 in. psig)	6	1, 2	1, 2	2 Total (Narrow and Wide Range)	1 Total (Narrow Range)	1	2 Total (Narrow Range)	Drywell Pressure - Narrow Range
Drywell Pressure (0 to 250 psig)	5	1, 2	1, 2	2 Total (Narrow and Wide Range)	1	2	2	Drywell Pressure - Wide Range
Drywell Temperature	7	1, 2	1, 2	2	1	6	2	Drywell Air Temperature
Neutron Monitoring	11	1, 2	1, 2	2	2	4	2	(Source Range) Neutron Monitors
Torus to Drywell Differential Pressure	Relocated to TSUP 3.7.H	1, 2	1, with Rx Power > 15%	D - 1; Q - 2	1	2	1	Drywell - Suppression Chamber Differential Pressure
Drywell Radiation Monitor	12	1, 2	1, 2, 3	D - 1; Q - 2	1	2	1	Drywell Radiation Monitors
Main Steam RV Position Acoustic Monitor	10	1, 2	1, 2	1/valve	1/valve (Acoustic or Temp.)	1/valve	2/valve (1 each - Acoustic & Temp.)	Safety/Relief Valve Position Indicators - Acoustic and Temperature
Main Steam RV Position Temperature Monitor	10	1, 2	1, 2	1/valve	1/valve (Acoustic or Temp.)	1/valve	2/valve (1 each - Acoustic & Temp.)	Safety/Relief Valve Position Indicators - Acoustic and Temperature
Main Steam SV Position Acoustic Monitor	10	1, 2	1, 2	1/valve	1/valve (Acoustic or Temp.)	1/valve	2/valve (1 each - Acoustic & Temp.)	Safety/Relief Valve Position Indicators - Acoustic and Temperature
Main Steam SV Position Temperature Monitor	10	1, 2	1, 2	1/valve	1/valve (Acoustic or Temp.)	1/valve	2/valve (1 each - Acoustic & Temp.)	Safety/Relief Valve Position Indicators - Acoustic and Temperature
Drywell Hydrogen Concentration	9	1, 2	1, 2	1	1	2	2	Drywell Hydrogen Concentration Analyzer and Monitor
n/a - New Requirement	8	n/a	1,2	n/a	1	n/a	2	Drywell Oxygen Concentration Analyzer and Monitor

Comp[redacted] Matrix D-2
Dresden [redacted] Table 4.2.6
Quad Cities Table 4.2-4
TSUP Table 4.2.F-1

Post Accident Moni[redacted] Instrumentation Surveillance Requirements

CTS Instrument	TSUP Table 4.2.F-1 Item Nos.	TSUP Function	Channel Check	Channel Calibration
Reactor Pressure	1	Reactor Vessel Pressure	D/Q - D; TSUP - M	D - **OPEN ITEM**; Q - 3 mos., TSUP - E
Reactor Water Level	2	Reactor Vessel Water Level	D/Q - D; TSUP - M	D - **OPEN ITEM**; Q - 3 mos., TSUP - E
Torus Water Temperature	4	Torus Water Temperature	D/Q - D; TSUP - M	D - **OPEN ITEM**; Q - 3 mos., TSUP - E
Torus Air Temperature (Quad Cities CTS and TSUP only)	13	Torus Air Temperatue	Q - D; TSUP - M	Q - 3 mos.; TSUP - E
Torus Water Level Indicator - Narrow Range	**DELETED**			
Torus Water Level Indicator - Wide Range	3	Torus Water Level - Wide Range	D/Q - M; TSUP - M	D - **OPEN ITEM**; Q - 18 mos.; TSUP - E
Torus Water Level - Local Sight Glass	**DELETED**			
Torus Pressure	**OPEN ITEM**			
Drywell Pressure (-5 in. Hg to +5 in. psig)	6	Drywell Pressure - Narrow Range		D - **OPEN ITEM**; Q - 3 mos.; TSUP - E
Drywell Pressure (-10 in. Hg to +70 psig)	6	Drywell Pressure - Narrow Range	D/Q - D; TSUP - M	D - **OPEN ITEM**; Q - 3 mos.; TSUP - E
Drywell Pressure (0 to 250 psig)	5	Drywell Pressure - Wide Range	D - D, Q - M; TSUP - M	D - **OPEN ITEM**; Q - 3 mos.; TSUP - E
Drywell Temperature	7	Drywell Air Temperature	D/Q - D; TSUP - M	D - R, Q - 3 mos.; TSUP - E
Neutron Monitoring	11	(Source Range) Neutron Monitors	D/Q - D; TSUP - M	D - **OPEN ITEM**; Q - 3 mos.; TSUP - E
Torus to Drywell Differential Pressure	**Relocated to TSUP 4.7.H**	Drywell - Suppression Chamber Differential Pressure	D - D, Q - None; TSUP - D	D - **OPEN ITEM**; Q - 6 mos.; TSUP - E
Drywell Radiation Monitor	12	Drywell Radiation Monitors	D/Q - M; TSUP - M	D - R, Q - 18 mos.; TSUP - E
Main Steam RV Position Acoustic Monitor	10	Safety/Relief Valve Position Indicators - Acoustic and Temperature	D/Q - M; TSUP - M	D - **OPEN ITEM**; Q - None; TSUP - E
Main Steam RV Position Temperature Monitor	10	Safety/Relief Valve Position Indicators - Acoustic and Temperature	D/Q - M; TSUP - M	D - R, Q - 18 mos.; TSUP - E
Main Steam SV Position Acoustic Monitor	10	Safety/Relief Valve Position Indicators - Acoustic and Temperature	D/Q - M; TSUP - M	D - **OPEN ITEM**; Q - None; TSUP - E
Main Steam SV Position Temperature Monitor	10	Safety/Relief Valve Position Indicators - Acoustic and Temperature	D/Q - M; TSUP - M	D - R, Q - 18 mos.; TSUP - E
Drywell Hydrogen Concentration	9	Drywell Hydrogen Concentration Analyzer and Monitor	D/Q - M; TSUP - M	D/Q - 3 mos.; TSUP - Q
n/a - New Requirement	8	Drywell Oxygen Concentration Analyzer and Monitor	TSUP - M	TSUP - E

ENCLOSURE 1

Evaluation of Significant Hazards Consideration
TSUP 3/4.2
Instrumentation

Commonwealth Edison has evaluated the 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.

1) 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 to the current Technical Specifications (CTS) represent minor curtailments of the current requirements which are based on generic guidance or previously approved provisions for other stations. The proposed amendment for Dresden and Quad Cities Station's Technical Specification Section 3/4.2 are based on BWR-STS (NUREG-0123, Revision 4 "Standard Technical Specifications General Electric Plants BWR/4) guidance or NRC accepted changes at later operating BWR plants. Any deviations from BWR-STS and CTS requirements do not significantly increase the probability or consequences of any previously evaluated accident for Dresden and Quad Cities Station. These proposed changes are consistent with the current safety analyses and have 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 Instrumentation Systems are not assumed in any safety analysis to initiate any accident sequence for both Dresden and 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. These more prescriptive surveillance requirements increase the probability that the

ENCLOSURE 1

Evaluation of Significant Hazards Consideration
TSUP 3/4.2
Instrumentation

Instrumentation Systems will perform their intended functions. Therefore, the proposed TS will improve the reliability and availability of all affected systems and reduce the consequences of any accident previously evaluated.

2. *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, other than technically valid trip setpoint changes. Some of the changes may involve revision in the operation of the station; however, these changes provide additional restrictions which are in accordance with the current safety analyses, 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. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment for Dresden and Quad Cities Station's Technical Specification Section 3/4.2 is based on BWR-STS guidelines or NRC accepted changes at later operating BWR plants. 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 BWR-STS or later operating BWRs. Any deviations from BWR-STS or CTS requirements do not create the possibility of a new or different kind of accident than previously evaluated for Dresden and Quad Cities Stations. No new modes of operation are introduced by the proposed changes. Various 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 or adopt requirements that have been used at other operating BWRs with designs similar to Dresden and Quad Cities. 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 Instrumentation Systems 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 Instrumentation Systems 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.

ENCLOSURE 1

Evaluation of Significant Hazards Consideration
TSUP 3/4.2
Instrumentation

3. 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 within 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 3/4.2 implements present requirements in accordance with the guidelines set forth in the BWR-STS. Any deviations from BWR-STS and CTS requirements do not significantly reduce the margin of safety for Dresden and 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 readability, 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 Instrumentation Systems when required to mitigate accident conditions; therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Enclosure 2

"Information Only"
Marked-up Technical Specification Pages
Section 3/4.2

Dresden Unit 2 - DPR-19
Quad Cities Unit 1 - DPR-29
BWR-STS (NUREG 0123, Draft Rev. 4)

STS 4.3.2 4.3.3 4.3.4.1 4.3.5 4.3.6 4.3.7.5 4.3.7.6 4.3.7.8 4.3.9 TSUP 4.2 A - J

3.2 LIMITING CONDITION FOR OPERATION

PROTECTIVE INSTRUMENTATION

Applicability:

Applies to the plant instrumentation which performs a protective function.

Objective:

To assure the operability of protective instrumentation

STS 3.3.2 3.3.3 3.3.4.1 3.3.5 3.3.6 3.3.7.5 3.3.7.6 3.3.7.8 3.3.9
TSUP 3.2.A 3.2.B 3.2.C 3.2.D 3.2.E 3.2.F 3.2.G 3.2.H 3.2.I 3.2.J

Specifications:

A. Primary Containment Isolation Functions

When primary containment integrity is required, the limiting conditions of operation for the instrumentation that initiates primary containment isolation are given in Table 3.2.1.

STS 3.3.2 TSUP 3.2.A

B. Core and Containment Cooling Systems - Initiation and Control

The limiting conditions for operation for the instrumentation that initiates or controls the core and containment cooling systems are given in Table 3.2.2. This instrumentation must be operable when the system(s) it initiates or controls are required to be operable as specified in Specification 3.5.

STS 3.3.3 TSUP 3.2.B

4.2 SURVEILLANCE REQUIREMENTS

PROTECTIVE INSTRUMENTATION

Applicability:

Applies to the surveillance requirements of the instrumentation that performs a protective function.

Objective:

To specify the type and frequency of surveillance to be applied to protective instrumentation.

STS 4.3.2 TSUP 4.2.A

Specifications:

A. Primary Containment Isolation Functions

Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.1.

B. Core and Containment Cooling Systems - Initiation and Control.

Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.1.

STS 4.3.3 TSUP 4.2.B

FOR INFORMATION ONLY

3.2 LIMITING CONDITION FOR OPERATION (CONT'D)	4.2 SURVEILLANCE REQUIREMENTS (CONT'D)
C. Control Rod Block Actuation 1. The limiting conditions of operation for the instrumentation that initiates control rod block are given in Table 3.2.3.	C. Control Rod Block Actuation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.1.
2. The minimum number of operable instrument channels specified in Table 3.2.3 for the rod block monitor may be reduced by one in one of the trip systems for maintenance and/or testing, provided that this condition does not last longer than 24 hours in any 30-day period. If this condition exists for more than 24 hours in a 30-day period, the system shall be tripped. In addition, one channel may be bypassed above 30% power without a time restriction provided that a limiting control rod pattern does not exist and the remaining RBM channel is operable.	
D. Refueling Floor Radiation Monitors 1. Except as specified in Specifications 3.2.D.2, the two refueling floor radiation monitors shall be operable whenever irradiated fuel or components are present	D. Refueling Floor Radiation Monitors The two refueling floor radiation monitors shall be functionally tested and calibrated as indicated in Table 4.2.1 Reactor building ventilation isolation and standby gas

STS 3.3.6
TSUP 3.2.E

STS 4.3.6
TSUP 4.2.E

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3/4.2-2

STS TABLE 3.3.2-1 Item 2.e
TSUP TABLE 3.2.A-1 Item 2.d

STS TABLE 4.3.2.1-1 Item 2.e
TSUP TABLE 4.2.A-1 Item 2.d

TSUP 4.7.P.4.b.1)
TSUP 4.7.P.4.b.2)
TSUP 4.7.D.2

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STS TABLE 3.3.2-1 ITEM 2.e
TSUP TABLE 3.2.A-1 ITEM 2.d

3.2 LIMITING CONDITION FOR OPERATION (CONT'D)	4.2 SURVEILLANCE REQUIREMENTS (CONT'D)
in the fuel storage pool and during refueling or fuel movement operations.	treatment system initiation shall be performed at least each operating cycle.
2. One of the two refueling floor radiation monitors may be inoperable for 24 hours. If the inoperable monitor is not restored to service in this time, the reactor building ventilation system shall be isolated and the standby gas treatment operated until repairs are complete.	STS TABLE 4.3.2.1-1 ITEM 2.e TSUP TABLE 4.2.A-1 ITEM 2.d
3. The trip setting for the refueling floor radiation monitors shall be set at a less than or equal to 100mr/hr.	
4. Upon loss of both refueling floor radiation monitors while in use, the reactor building ventilation system shall be isolated and the standby gas treatment operated.	
E. Post Accident Instrumentation The limiting conditions for operation for the instrumentation, which is read out in the control room, required for post accident monitoring are given in Table 3.2.6.	E. Post Accident Instrumentation Post accident instrumentation shall be functionally tested and calibrated as indicated in Table 4.2.4.

STS 3.3.2 ACTION C
TSUP 3.2.A ACTION 3

STS TABLE 3.3.2-2 COL. 3, ITEM 2.e
TSUP TABLE 3.2.A-1 COL. 2, ITEM 2.d

STS 3.3.2, ACTION C,
STS TABLE 3.3.2-1 ACTION 26
TSUP 3.2.A, ACTION 3
TSUP TABLE 3.2.A-1 ACTION 24

STS 4.3.7.5
TSUP 4.2.F

STS 3.3.7.5
TSUP 3.2.F

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LIMITING CONDITION FOR OPERATION (CONT'D)	4.2 SURVEILLANCE REQUIREMENTS (CONT'D)
F. Radioactive Liquid Effluent Instrumentation	F. Radioactive Liquid Effluent Instrumentation
1. The effluent monitoring instrumentation shown in Table 3.2.4 shall be operable with alarm trip setpoints set to insure that the limits of specification 3.8.B are not exceeded. The alarm setpoints shall be determined in accordance with the Off-Site Dose Calculation Manual (ODCM).	Each radioactive liquid effluent monitoring instrument shown in Table 4.2.2 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequencies shown in Table 4.2.2.
2. With a radioactive liquid effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive liquid effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.	
3. With one or more radioactive liquid effluent monitoring instruments inoperable, take the action shown in Table 3.2.4. Exert reasonable efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the	

RELOCATED TO ODCM per GL 89-01

ODCM 12.2.A.2

ODCM-DRESDEN ANNEX 12.2.A.1.1

ODCM 12.2.A.1.2

ODCM 12.2.A.1.3

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3.2 LIMITING CONDITION FOR OPERATION (CONT'D)

4.2 SURVEILLANCE REQUIREMENTS (CONT'D)

inoperability was not corrected in a timely manner. This is in lieu of an LER.

4. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC pursuant to Specification 6.6.B.2., and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

Relocated TO ODCM per GL 89-01

ODCM 12.2.A.1.4

G. Radioactive Gaseous Effluent Instrumentation

G. Radioactive Gaseous Effluent Instrumentation

Relocated TO ODCM per GL 89-01

1. The effluent monitoring instrumentation shown in Table 3.2.5 shall be operable with alarm/trip setpoints set to ensure that the limits of specification 3.8.A are not exceeded. The alarm/trip setpoints shall be determined in accordance with the ODCM.

Each radioactive gaseous radiation monitoring instrument in Table 4.2.3 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequency shown in Table 4.2.3.

ODCM 12.2.B.1.1

2. With a radioactive gaseous effluent monitoring instrument alarm/trip setpoint less conservative

ODCM 12.2.B.1.2

ODCM 12.2.B.2

FOR INFORMATION ONLY

3.2 LIMITING CONDITION FOR OPERATION (CONT'D)

4.2 SURVEILLANCE REQUIREMENTS (CONT'D)

than required, without delay suspend the release of radioactive gaseous effluents monitored by the affected instruments, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

3. With one or more radioactive gaseous effluent monitoring instruments inoperable, take the action shown in Table 3.2.5. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

RELOCATED TO ODCM per GL 89-01

ODCM 12.2.B.1.3

4. The unit 2/3 plant chimney gas sampling system may be out of service for 48 hours for the purpose of servicing the high range noble gas monitor as long as the following conditions are satisfied:

ODCM 12.2.B.1.4

a. Both units are at steady state conditions with the recombiners and charcoal absorbers in service for the operating unit(s).

ODCM 12.2.B.1.4.1

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3.2 LIMITING CONDITION FOR OPERATION (CONT'D)

4.2 SURVEILLANCE REQUIREMENTS (CONT'D)

b. The dose rate in unrestricted areas must be shown by calculation to be less than the limits of 3.8.A assuming the charcoal absorbers are bypassed on both units.

ODCM 12.2.B, 1.4.2

c. Both offgas monitors on Unit 2 and Unit 3 must be operational and the monitor reading correlated to the chimney release rate based on the conservative assumption of both units' charcoal absorbers being bypassed.

ODCM 12.2.B.1.4.3

RELOCATED TO ODCM per GL 89-01

d. If the provisions of 3.8.A.1.a, b or c cannot be met, an orderly load reduction of the unit(s) shall be initiated immediately.

ODCM 12.2.B.1.4.4

5. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC pursuant to Specification 6.6.B.2., and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

ODCM 12.2.B.1.5

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3.2 LIMITING CONDITION FOR OPERATION (CONT'D)	4.2 SURVEILLANCE REQUIREMENTS (CONT'D)
H. Recirculation Pump Trip Initiation The recirculation pump trip system, initiated by low low reactor water level or high reactor pressure, limiting conditions for operation are specified in Table 3.2.7.	H. Recirculation Pump Trip Initiation Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2.5.

STS 3.3.4.1
TSuP 3.2.C

STS 4.3.4.1
TSuP 4.2.C

FOR INFORMATION ONLY

STS TABLE 3.3.2-1
TSUP TABLE 3.2.A-1

STS 3.3.2-1 col. 3.
TSUP 3.2.A-1 col. 3

TABLE 3.2.1

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION FUNCTIONS

STS 3.3.2-2 col. 1
TSUP 3.2.A-1 col. 1

STS 3.3.2-2 column 3
TSUP 3.2.A-1 column 2

STS 3.3.2-1 column 5
TSUP 3.2.A-1 column 5

MINIMUM # OF OPERABLE INST. CHANNELS PER TRIP SYSTEM (1)	INSTRUMENTS	TRIP LEVEL SETTING	ACTION (3)
2	Reactor Low Water Level	Greater than 144" above top of active fuel (9)	A
2	Reactor Low Low Water	Greater than or equal to 84" above top of active fuel (9)	A
2	High Drywell Pressure	Less than or equal to 2 psig (4),(5)	A
2 (2)	High Flow Main Steam Line	Less than or equal to 120% of rated steam flow	B
2 of 4 in each of 4 sets	High Temperature Main Steamline Tunnel	Less than or equal to 200°F.	B
2	High Radiation Main Steamline Tunnel	Less than or equal to 3 times full power background (7),(6)	B
2	Low Pressure Main Steamline	Greater than or equal to 850 psig	B
1	High Flow Isolation Condenser Line Steamline Side	Less than or equal to 300% rated steam flow	C
1	Condensate Return Side	Less than or equal to 32" water diff on condensate return side	C
2	High Flow HPCI Steamline	Less than or equal to 300% rated steam flow	D
4	High Temperature HPCI Steamline Area	Less than or equal to 200°F.	D

STS Items 1a; 2a; 4e; and 7a
TSUP Items 1a; 2a; 4b; and 7a

STS & TSUP Item 3a.

STS & TSUP Items 1b and 2b

STS & TSUP Item 3d

STS & TSUP Item 3e

STS & TSUP Item 3b

STS & TSUP Item 3c

TSUP Item 5a

TSUP Item 5b

STS & TSUP Item 6a

STS Item 6d
TSUP Item 6c

Notes:
(See next Page)

STS 3.3.2; ACTIONS b. and c.
TSUP 3.2.A; ACTIONS 2. and 3.

TABLE 3.2.1 (Notes)

1. When primary containment integrity is required, there shall be two operable or tripped trip systems for each function, except for low pressure main steamline which only need be available in the RUN position.

INCORPORATED INTO TABLE 3.2.A-1, COLUMN 3, ITEM 3.d

2. Per each steamline.

3. Action: If the first column cannot be met for each of the trip systems, that trip system shall be tripped.

STS 3.3.2 ACTION b. TSUP 3.2.A ACTION 2.

STS 3.3.2 ACTION C. TSUP 3.2.A ACTION 3

If the first column cannot be met for both trip systems, the appropriate action listed below shall be taken:

STS 3.3.2-1 ACTION 20 TSUP 3.2.A-1 ACTION 20

A. Initiate an orderly shutdown and have reactor in cold shutdown condition in 24 hours.

B. Initiate an orderly load reduction and have reactor in hot standby condition in 8 hours.

STS ACTION 21 TSUP ACTION 21

STS 3.3.2-1 ACTION 23 TSUP 3.2.A-1 ACTION 23

C. Close isolation valves in Isolation Condenser System.

D. Close isolation valves in HPCI subsystem.

TSUP 3.2.A-1 NOTE d.

4. Need not be operable when primary containment integrity is not required.

5. May be bypassed when necessary during purging for containment inerting and deinerting. Deleted

6. An alarm setting of less than or equal to 1.5 times normal background at rated power shall be established to alert the operator to abnormal radiation levels in the primary coolant. Deleted

TSUP 3.2.A-1 NOTE g. TSUP Table 2.2.A-1 NOTE b.

7. Due to addition of hydrogen to the primary coolant, the Main Steam Line Radiation monitor setting will be less than or equal to 3 times full power background without hydrogen addition for all conditions except for greater than 20% power with hydrogen being injected during which the Main Steam Line Radiation trip setting will be less than or equal to 3 times full power background with hydrogen addition. Required changes in Main Steam Line Radiation monitor trip setting will be made within 24 hours except during controlled power descensions at which time the setpoint change will be made prior to going below 20% power. If due to a recirculation pump trip or other unanticipated power reduction event the reactor is below 20% power without the setpoint change, control rod motion will be suspended until the necessary trip setpoint adjustment is made.

8. Verification of time delay setting between 3 and 9 seconds shall be performed during each refueling outage.

TSUP 3.2.A-1 NOTE h

9. Top of active fuel is defined as 360" above vessel zero for all water levels used in the LOCA analyses. (See design Bases 3.2)

TSUP 3.2.A-1 NOTE

STS 3.3.3-1 Col. 1 TSUP 3.2.B-1 Col. 1

STS TABLE 3.3.3-1 TSUP TABLE 3.2.B-1

STS 3.3.3-2 Col. 3 TSUP 3.2.B-1 Col. 2

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TABLE 3.2.2

INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT COOLING SYSTEMS

MINIMUM # OF OPERABLE INST. CHANNELS PER TRIP SYSTEM (1)	TRIP FUNCTION	TRIP LEVEL SETTING	Remarks
2	Reactor Low Low Water Level	Greater than or equal to 84" above top of active fuel (5)	1. In conjunction with low reactor pressure initiates core spray and LPCI. 2. In conjunction with high-drywell pressure, 120 sec. time delay, and low pressure core cooling interlock initiates auto blowdown. 3. Initiates HPCI and SBGTS. 4. Initiates starting of diesel generators.
2	High Drywell Pressure (2),(3)	Less than or equal to 2 PSIG	1. Initiates core spray LPCI, HPCI, and SBGTS. 2. In conjunction with low low water level 120 sec. time delay and low pressure core cooling interlock initiates auto blowdown. 3. Initiates starting of diesel generators.
1	Reactor Low Pressure	Greater than or equal to 300 PSIG & less than or equal to 350 PSIG	1. Permissive for opening core spray and LPCI admission valves. 2. In conjunction with low low reactor water level initiates core spray and LPCI.
1(4)	Containment Spray Interlock 2/3 Core Height	Greater than or equal to 2/3 core height	Prevents inadvertent operation of containment spray during accident conditions.
2(4)	Containment High Pressure	Greater than or equal to 0.5 PSIG & less than or equal to 1.5 PSIG	Prevents inadvertent operation of containment spray during accident conditions.
1	Timer Auto Blowdown	Less than or equal to 120 seconds	In conjunction with low low reactor water level, high dry-well pressure and low pressure core cooling interlock initiates auto blowdown.
2	Low Pressure Core Cooling Pump Discharge Pressure	Greater than or equal to 50 PSIG & less than or equal 100 PSIG	* Defers APR actuation pending confirmation of low pressure core cooling system operation.
2/Bus	4 KV Loss of Voltage Emergency Buses	Trip on 2930 volts plus or minus 5% decreasing voltage	1. Initiates starting of diesel generators. 2. Permissive for starting ECCS pumps. 3. Removes nonessential loads from buses. 4. Trips emergency bus normal feed breakers.
2	Sustained High Reactor Pressure	Less than or equal to 1070 PSIG for 15 seconds	Initiates isolation condenser
2/Bus	Degraded Voltage on 4 KV Emergency Buses	Greater than or equal to 3708 volts (equals 3784 volts less 2% tolerance) after less than or equal to 5 minutes (plus 5% tolerance) with a 7 second (plus or minus 20%) inherent time delay	Initiates alarm and picks up time delay relay. Diesel generator picks up load if degraded voltage not corrected after time delay.

STS Items 1a., 2a., 3a., 4a. TSUP Items 1a., 2a., 3a., 4a., 5a.

STS 1b., 2b., 3b., 4b.; TSUP 1b., 2b., 3b., 4b., 5b.

STS 1c., 2c. TSUP 1c., 2c.

STS TABLE 3.3.9-1 Items a. and c. TSUP Table [illegible] Items 1 and 2

STS Item 4c. TSUP Items 4.c and 5.c

STS Items 4e. and 4.- TSUP Items 4.e, 4.-, 5.-, 5.-

STS Item 5.1 TSUP Item 6.a

Notes: (See next page)

STS Item 5.2 TSUP Item 6.b

TSUP Table 3.2.D-1

STS 3.3.3, ACTION b; STS 3.3.3-1, ACTIONS 30 TO 38
TSUP 3.2.B, ACTION 2; TSUP 3.2.B-1 ACTIONS 30-36

TABLE 3.2.2 (Notes)

1. For all positions of the Reactor Mode Selector Switch whenever any ECCS subsystem is required to be operable, there shall be two operable or tripped trip systems. If the first column cannot be met for one of the trip systems, that system shall be tripped. If the first column cannot be met for both trip systems, immediately initiate an orderly shutdown to cold conditions.

TSUP 3.2.B-1 NOTE f.

2. Need not be operable when primary containment integrity is not required.

3. May be bypassed when necessary during purging for containment inerting or deinerting.

4. If an instrument is inoperable, it shall be placed (or simulated) in the tripped condition so that it will not prevent containment spray.

5. Top of active fuel is defined as 360" above vessel zero for all water levels used in the LOCA analyses. ~~(See Design Bases 3.2)~~

* APR = Automatic Pressure Relief

Deleted

TSUP 3.2.B-1 NOTE h.

TSUP TABLE 3.2.I-1 NOTE b.

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STS Table 3.3.6-1
TSUP Table 3.2.E-1

FOR INFORMATION ONLY

TABLE 3.2.3

INSTRUMENTATION THAT INITIATES ROD BLOCK

STS 3.3.6-1 col. 2
TSUP 3.2.E-1 col 3

STS 3.3.6-1 col 1
TSUP 3.2.E-1 col 1

STS 3.3.6-2, col. 3
TSUP 3.2.E-1, col. 2

Minimum No. of Operable Inst. Channels Per Trip System (1)	Instrument	Trip Level Setting
	APRM upscale (flow bias) (7)	
1	Dual Loop Operation	Less than or equal to (.58 W_D plus 50)/FDLRC (See Note 2)
1	Single Loop Operation	Less than or equal to (.58 W_D plus 46.5)/FDLRC (see Note 2)
1	APRM upscale (refuel and Startup/Hot Standby mode)	Less than or equal to 12/125 full scale
2	APRM downscale (7)	Greater than or equal to 3/125 full scale
	Rod block monitor upscale (flow bias) (7)	
1	Dual Loop Operation	See Core Operating Limits Report
	Single Loop Operation	See Core Operating Limits Report
1	Rod block monitor downscale (7)	Greater than or equal to 5/125 full scale
3	IRM downscale (3)	Greater than or equal to 5/125 full scale
3	IRM upscale	Less than or equal to 108/125 full scale
3	IRM detector not fully inserted in the core	N/A
2 (5)	SRM detector not in startup position	(4)
2 (5) (6)	SRM upscale	Less than or equal to 10^5 counts/sec.
1 (per bank)	Scram discharge volume water level - high	(LT/E) 26 inches above the bottom of the instrument volume

Notes: (See Next Page)

STS Item 1.a
TSUP Item 1.a

STS Item 1.c
TSUP Item 1.c

STS Item 4.d
TSUP Item 4.d

STS Item 4.b
TSUP Item 4.b

STS Item 4.a
TSUP Item 4.a

STS Item 3.a
TSUP Item 3.a

STS Item 3.b
TSUP Item 3.b

STS Item 2a.
TSUP Item 2.a.1

STS Item 2a.
TSUP Item 2.a.2

STS Item 2d
TSUP Item 2d

STS Item 2.c
TSUP Item 2.c

STS Item 5.a
TSUP Item 5.a

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Incorporated into Col 3

TABLE 3.2.3 (Notes)

1. For the Startup/Hot Standby and Run positions of the Reactor Mode Selector Switch, there shall be two operable or tripped trip systems for each function, except the SRM rod blocks, IRM upscale, IRM downscale and IRM detector not fully inserted in the core need not be operable in the "Run" position and APRM downscale, APRM upscale (flow bias), and RBM downscale need not be operable in the Startup/Hot Standby mode. A RBM upscale need not be operable at less than 30% rated thermal power. One channel may be bypassed above 30% rated thermal power provided that a limiting control rod pattern does not exist. For systems with more than one channel per trip system, if the first column cannot be met for both trip systems, the systems shall be tripped. For the scram discharge volume water level high rod block, there is one instrument channel per bank.

Incorporated IN Col. 4

STS Actions 61, 62 TSUP Actions 51, 52

Incorporated INTO Item 5.a, col 3

STS 3.3.6-1 Note a, TSUP 3.2.E-1 Note a.

TSUP 3.2.E-1 Note h.

2. W_D percent of drive flow required to produce a rated core flow of 98 Mlb/hr. FDLRC = fuel design limiting ratio for centerline melt.

Deleted

3. IRM downscale may be bypassed when it is on its lowest range.

4. This function may be bypassed when the count rate is greater than or equal to 100 cps.

5. One of the four SRM inputs may be bypassed.

Incorporated into col. 3

6. This SRM function may be Bypassed in the higher IRM ranges when the IRM upscale Rod Block is operable.

7. Not required while performing low power physics test at atmospheric pressure during or after refueling at power levels not to exceed 5 MWt.

STS 3.3.6-1, Note e, TSUP 3.2.E-1, Note e.

STS 3.3.6-1, Note c, TSUP 3.2.E-1, Note c.

STS 3.3.6-1, Note b. TSUP 3.2.E-1, Note b.

TSUP 3.12.A

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TABLE 3.2.4

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels	Total No. of Channels	Parameter	Action
1	1	Service Water Effluent Gross Activity Monitor	A
1	1	Liquid Radwaste Effluent* Gross Activity Monitor	B
1	1	Tank Level Indicating Devices a. A Waste Sample Tank b. B Waste Sample Tank c. C Waste Sample Tank d. A Floor Drain Sample Tank e. B Floor Drain Sample Tank f. Waste Surge Tank	C

ODCM TABLE 12.2-1 ITEMS 1 & a

Notes:

ODCM TABLE 12.2-1 ACTION 10

Action A: With less than the minimum number of operable channels, releases via this pathway may continue, provided that at least once per 12 hours grab samples are collected and analyzed for beta or gamma activity at an LLD of less than or equal to 10^{-7}uCi/ml.

ODCM TABLE [illegible] ACTION [illegible]

Action B: With less than a minimum number of operable channels, effluent releases via this pathway may continue, provided that prior to initiating a release, at least 2 independent samples are analyzed, and at least 2 members of the facility staff independently verify the release calculation and discharge valving. Otherwise, suspend release or radioactive effluent via this pathway.

Action C: With less than a minimum number of operable channels, liquid additions to this tank may continue provided the tank liquid level is estimated during all liquid additions to the tank.

* Flowrates are to be determined by appropriate pump curves.

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Relocated TO ODCM per GL 89-01

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FOR INFORMATION ONLY

OPEN ITEM

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ODCM TABLE 12.2-3

FOR INFORMATION ONLY

TABLE 3.2.5

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels (1)	Total No. of Channels	Parameter	Action (2)
1	2	Off-Gas Radiation Activity Monitor	D
1	3	Main Chimney Noble Gas SPING/GE Low Range Activity Monitor	A
1	1	Main Chimney SPING Noble Gas Monitors Mid, Hi Range	A
1	1	Main Chimney Iodine Sampler	C
1	1	Main Chimney Particulate Sampler	C
1	1	Main Chimney Flow Rate Monitor	B
1	1	Main Chimney Sampler Flow Rate Monitor	B
1	2	Reactor Building Vent Exhaust Duct Radiation Monitor	E
1	1	Reactor Building Vent SPING Noble Gas Monitor Low, Mid, High Range	F
1	1	Reactor Building Vent Flow Rate Monitor	B
1	1	Reactor Building Vent Sampler Flow Rate Monitor	B
1	1	Reactor Building Vent Iodine Sampler	C
1	1	Reactor Building Vent Particulate Sampler	C
1	1	MVRS Process Exhaust Iodine Sampler	E
1	1	MVRS Process Exhaust Particulate Sampler	E
1	1	MVRS HVAC Exhaust Iodine Sampler	E
1	1	MVRS HVAC Exhaust Particulate Sampler	E

Notes:
(See Next Page)

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RELOCATED TO ODCM per GL 89-01

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ODCM TABLE 12.2-3

FOR INFORMATION ONLY

TABLE 3.2.5 (Notes)

1. For Off-Gas Radiation Monitors, applicable during SJAE operation. For other instrumentation, applicable at all times.

ACTION 20

2. Action A: With the number of operable channels less than the minimum requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 8 hour shift and these samples are analyzed within 24 hours.

ACTION 21

Action B: With the number of operable channels less than the minimum required, effluent releases via this pathway may continue provided that the flow rate is estimated at least once per 4 hours.

ACTION 22

Action C: With less than the minimum channels operable, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment, as required in Table 4.8.1.

Action D: With less than the minimum channels operable, gases from the main condenser off gas system may be released to the environment for up to 72 hours provided the off gas system is not bypassed and at least one chimney monitor is operable; otherwise, be in hot standby in 12 hours.

ACTION 24

Action E: With less than the minimum channels operable, immediately suspend release of radioactive effluents via this pathway.

ACTION 25

Action F: With less than the minimum channels operable, effluent releases via this pathway may continue provided that the minimum number of operable channels or the Reactor Building Vent Exhaust Duct Radiation Monitor are operable.

RELOCATED TO ODCM PER GL 89-01

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FOR INFORMATION ONLY

STS TABLE 3.3.7.5-1
TSUP TABLE 3.2.F-1

FOR INFORMATION ONLY

Table 3.2.6 DELETED

Post Accident Monitoring Instrumentation Requirements

Minimum Number of Operable Channels (1)	Parameter	Instrument Readout Location Unit 2	Number Provided	Instrument Range
1	Reactor Pressure	902-5	1	0-1500 psig
			2	0-1200 psig
		902-3	1	0-1500 psig
1	Reactor Water Level	902-3,5	2	-340 to +60 inches
1	Torus Bulk Water Temperature	902-4,37	2	0-300°F
2 (3)	Torus Water Level Indicator	902-3	1	-20 to +20 inches (narrow range)
		902-2	2	0-30 ft (wide range)
	Torus Water Local Sight Glass		1	40 inch range (narrow range)
1 (4)	Torus Pressure	902-5	1	-2.45 to +5 psig
2	Drywell Pressure	902-5	1	0-5 psig
		902-3	1	-5 to +70 psig
		902-3	2	-5 to +250 psig
2	Drywell Temperature	902-3	6	0-600°F
2	Neutron Monitoring	902-5	4	$0.1\text{-}10^6$ CPS
1 (4)	Torus to Drywell Differential Pressure	902-3	2	0-3 psid
1	Drywell Radiation Monitor	902-55,56	2	$1 \text{ to } 10^8$ R/hr
1/valve (2)	Main Steam RV Position, Acoustic Monitor	902-21	1 per valve	N/A
1/valve (2)	Temperature Monitor	902-21	1 per valve	0-600°F
1/valve (2)	Main Steam SV Position, Acoustic Monitor	902-21	1 per valve	N/A
1/valve (2)	Temperature Monitor	902-21	1 per valve	0-600°F
1 (5)	Drywell Hydrogen Concentration	902-55 902-56	2	0-10%

Notes: (See Next Page)

FOR INFORMATION ONLY

STS 3.3.7.5-1 ACTION 80.a
STS 3.2.F-1 ACTION 60.a

FOR INFORMATION ONLY

Table 3.2.6

Notes

1. From and after the date that a parameter is reduced to the minimum number of channels, continued operation is not permissible beyond thirty (30) days unless such instrumentation is sooner made operable. In the event that all indications of a parameter is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in twenty-four (24) hours. See notes 2, 3, 4 and 5 for exceptions to this requirement.

STS 3.3.7.5-1 ACTION 80.b
TSUP 3.2.F-1 ACTION 60.b

2. If the number of position indicators is reduced to one indication on one or more valves, continued operation is permissible; however, if the reactor is in a cold shutdown condition for longer than 72 hours, it may not be started up until all position indication is restored. In the event that all position indication is lost on one or more valves and such indication cannot be restored in thirty (30) days, an orderly shutdown shall be initiated, and the reactor shall be depressurized to less than 90 psig in twenty-four (24) hours.

TSUP 3.2.F-1 ACTION 63.a

TSUP 3.2.F-1 ACTION 63.b

3. From and after the date that this parameter is reduced to either one narrow-range indication or one wide-range indication, continued reactor operation is not permissible beyond thirty (30) days unless such instrument is sooner made operable. In the event that either all narrow-range indication or all wide-range indication is disabled, continued reactor operation is not permissible beyond seven (7) days unless such instruments are sooner made operable. In the event that all indication for this parameter is disabled, and such indication cannot be restored in six (6) hours, an orderly shutdown shall be intitiated and the reactor shall be in a cold shutdown condition in twenty-four (24) hours.

STS 3.3.7.5-1 ACTION 80.a
TSUP 3.2.F-1 ACTION 60.a

STS 3.3.7.5-1 ACTION 80.b
TSUP 3.2.F-1 ACTION 60.b

4. From and after the date that one of these parameters becomes inoperable, continued operation is not permissible beyond thirty (30) days unless such instrumentation is sooner made operable. In the event that all indication of these parameters is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be intitiated and the reactor shall be in cold shutdown in twenty-four (24) hours.

STS 3.3.7.5-1 ACTION 80.b
TSUP 3.2.F-1 ACTION 60.b

5. From and after the date that one of the drywell hydrogen monitors becomes inoperable, continued reactor operation is permissible.

   a. If both drywell hydrogen monitors are inoperable, continued reactor operation is permissible for up to 30 days provided that during this time the HRSS hydrogen monitoring capability for the drywell is operable.

   b. If all drywell hydrogen monitoring capability is lost, continued reactor operations is permissible for up to 7 days.

TSUP 3.2.F-1 ACTION 62

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FOR INFORMATION ONLY

STS TABLE 3.3.4.1-1
TSUP TABLE 3.2.C-1

FOR INFORMATION ONLY

TABLE 3.2.7

STS 3.3.4.1-1, col. 1
TSUP 3.2.C-1, col. 1

INSTRUMENTATION THAT INITIATES RECIRCULATION PUMP TRIP

STS 3.3.4 & TSUP 3.2.C Applicability

STS 3.3.4.1-1, col 3
TSUP 3.2.C-1, col 3

STS 3.3.4.1-1 col 2
TSUP 3.2.C-1, col 2.

Trip Function	Minimum Number of Operable or Tripped Instrument Channels Per Trip System (a)	Trip Level Setting	Applicable Operational Mode	Action #
High Reactor Pressure	2	(GT/E) 1230 psig & (LT/E) 1250 psig	1 (d)	70
Low Low Reactor Water Level	2	(GT/E) 84 inches above top of active fuel (b)(c)	1 (d)	70

STS 3.3.4 & TSUP 3.2.C ACTIONS 1, 2, 3, 4, and 5

Action 70 The minimum number of operable trip systems shall be four, two high reactor pressure and two low low reactor water level, except that one trip system may be inoperable for up to fourteen days. If one trip system is inoperable for greater than fourteen days, or if any two trip systems are made or found to be inoperable, the reactor must be placed in at least the Startup/Hot Standby Mode in the next 8 hours.

STS 3.3.4.1-1 and TSUP 3.2.C-1 NOTE (a)

NOTE:

a. A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one operable channel in the same trip system is monitoring that parameter.

b. Top of active fuel is defined to be 360 inches above vessel zero.

c. The trip will occur following a (GT/E) 8 & (LT/E) 10 second delay.

d. MODE 1 is the RUN MODE

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TSUP 3.2.C-1, NOTE (b)

TSUP 3.2.C-1, NOTE (c)

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STS TABLES 4.3.2.1-1; 4.3.3-1; 4.3.6-1; 4.3.7.5-1
TSUP Tables 4.2.A-1; 4.2.B-1; 4.2.E-1; 4.2.F-1

Table 4.2.1

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS INSTRUMENTATION, ROD BLOCKS, AND ISOLATIONS

Instrument Channel	Instrument Functional Test	Calibration	Instrument Check
ECCS Instrumentation (1a, 2a, 3a, 4a, 5a)			
1. Reactor Low-Low Water Level	(1)	Once/3 Months	Once/Day
2. Drywell High Pressure (1b, 2b, 3b, 4b, 5b)	(1)	Once/3 Months	None
3. Reactor Low Pressure	(1)	Once/3 Months	None
4. Containment Spray Interlock			
a. 2/3 Core Height	(1) (13)	(13)	None
b. Containment High Pressure	(1)	Once/3 Months	None
5. Low Pressure Core Cooling Pump Discharge Pressure (4e, 4f, 5e, 5f)	(1)	Once/3 Months	None
6. Undervoltage Emergency Bus (6a)	Refueling Outage	Refuel Outage	Once/3 months
7. Sustained High Reactor Pressure	(1)	Once/3 Months	None
8. Degraded Voltage Emergency Bus (6b)	Refueling Outage (10)	Refuel Outage	Monthly
Rod Blocks			
1. APRM Downscale (2c)	(1) (3)	Once/3 Months	None
2. APRM Flow Variable (2a, 2d)	(1) (3)	Refuel Outage	None
3. APRM Upscale (Startup/Hot Standby)	(2) (3)	(2) (3)	(2)
4. IRM Upscale (4b)	(2) (3)	(2) (3)	(2)
5. IRM Downscale (4d)	(2) (3)	(2) (3)	(2)
6. IRM Detector Not Fully Inserted in the Core (4a)	(2)	N/A	None
7. RBM Upscale (1a) (5a, 5b)	(1) (3)	Refuel Outage	None
8. RBM Downscale (1c)	(1) (3)	Once/3 Months	None
9. SRM Upscale (3b, 3a)	(2) (3)	(2) (3)	(2)
10. SRM Detector Not in Startup Position	(2) (3)	(2) (3)	(2)
11. Scram Instrument Volume Level High	Once/3 Months (9)	None	None
Containment Monitoring			
1. Pressure			
a. Minus 5 in. Hg to plus 5 psig Indicator, Top	None	Once/3 Months	Once/Day
b. -5 to +70 psig Indicator Dw pressure	None	Once/3 Months	None
2. Temperature	None	Refuel Outage	Once/Day
3. Drywell-Torus Differential Pressure (5) (6) (0-3 psid)	None	Once/6 Months (Two Channels Operable) Once/Month (One Channel Operable)	None
4. Torus Water Level (5) (6)	None	Once/6 Months	
a. -20 to +20 inches Narrow Range Indicator			
b. 40 in. Sight Glass (deleted)			
Safety/Relief Valve Monitoring			
1. Safety/Relief Valve Position Indicator (Acoustic Monitor) (8) (deleted)	(7)	None	Once Per 31 Days
2. Safety/Relief Valve Position Indicator (Temperature Monitor) (8)	None	Once every 18 months	Once Per 31 Days
3. Safety Valve Position Indicator (Acoustic Monitor) (8)	(7)	None	Once Per 31 Days
4. Safety Valve Position Indicator (Temperature Monitor) (8)	None	Once every 18 months	Once Per 31 Days

(Table cont'd next page)

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STS TABLE 4.3.2.1-1, ITEMS 3b, 3c, 3d, 3f
TSUP Table 4.2.A-1, Items 3b, 3c, 3d, 3e

Table 4.2.1

DRESDEN II DPR-19
Amendment No. 82, 83, 84, 90

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS INSTRUMENTATION, ROD BLOCKS, AND ISOLATIONS (Cont'd)

Instrument Channel (STS Item 3.f / TSUP Item 3.e)	Instrument Functional Test	Calibration	Instrument Check
Main Steam Line Isolation			
1. Steam Tunnel High Temperature (Item 3.d)	Refueling Outage (1)	Refuel Outage	None
2. Steam Line High Flow (Item 3.c)	(1)	Once/3 Months	Once/Day
3. Steam Line Low Pressure	(1)	Once/3 Months	None
4. Steam Line High Radiation (Item 3.b)	(1) (3)	Once/3 Months (4)	Once/Day
Isolation Condenser Isolation (TSUP TABLE 4.2.A-1 Items 5a and 5b)			
1. Steam Line High Flow (Item 5a.)	(1)	Once/3 Months	None
2. Condensate Line High Flow (Item 5.b)	(1)	Once/3 Months	None
HPCI Isolation			
1. Steam Line High Flow (Item 6a.)	(1) (11) (12)	(11) (12)	None
2. Steam Line Area High Temperature (STS Item 6c. / TSUP Item 6d.)	Refueling Outage	Refuel Outage	None
3. Low Reactor Pressure (Item 6.b)	(1) (13)	(13)	None
Reactor Building Vent Isolation and SBGTS Initiation			
1. Refueling Floor Radiation Monitors	(1)	Once/3 Months	Once/Day

STS TABLE 4.3.2.1-1, ITEMS 6a, 6b, & 6d
TSUP Table 4.2.A-1, ITEMS 6a, 6b, & 6c

STS TABLE 4.3.2.1-1, ITEM 2e
TSUP Table 4.2.A-1, ITEM 2d.

NOTES: (For Table 4.2.1)

1. Initially once per month until exposure hours (H as defined on Figure 4.1.1) is 2.0×10^5; thereafter, according to Figure 4.1.1 with an interval not less than one month nor more than three months. The compilation of instrument failure rate data may include data obtained from other Boiling Water Reactors for which the same design instrument operates in an environment similar to that of Dresden Unit 2.

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2. Function test calibrations and instrument checks are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed before each startup with a required frequency not to exceed once per week. Calibrations shall be performed during each startup or during controlled shutdowns with a required frequency not to exceed once per week. Instrument checks shall be performed at least once per week. Instrument checks shall be performed at least once per day during those periods when the instruments are required to be operable.

INCORPORATED INTO APPLICABLE OPERATIONAL MODE COLUMN (OR LCO APPLICABILITY)

3. This instrumentation is excepted from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel. See Note 4.

INCORPORATED INTO TSUP Table 4.3.2-1 Col. 2, 3, & 4

4. These instrument channels will be calibrated using simulated electrical signals once every three months. In addition, calibration including the sensors will be performed during each refueling outage.

5. A minimum of two channels is required.

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NOTES: (For Table 4.2.1) (Cont'd.)

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6. From and after the date that one of these parameters (...either drywell-torus differential pressure or torus water level indication) is reduced to one indication, continued operation is not permissible beyond thirty days, unless such instrumentation is sooner made operable. In the event that all indications of these parameters (...either drywell-torus differential pressure or torus water level) is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in twenty four hours.

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7. Functional tests will be conducted before startup at the end of each refueling outage or after maintenance is performed on a particular Safety/Relief Valve.

TSup 3.2.F-1 Action 63a and 63b

8. If the number of position indicators is reduced to one indication on one or more valves, continued operation is permissible; however, if the reactor is in a cold shutdown condition for more than seventy-two hours, it may not be started up until all position indication is restored. In the event that all position indication is lost on one or more valves and such indication cannot be restored in thirty days, an orderly shutdown shall be initiated, and the reactor shall be depressurized to less than 90 psig in 24 hours.

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9. The functional test of the Scram Discharge Volume thermal switches is not applicable; i.e., the switch is either on or off. Further, these switches are mounted solidly to the device and have a very low probability of moving; e.g., the thermal switches in the scram discharge volume tank. Based on the above, no calibration is required for these instrument channels.

10. Functional test shall include verification of the second level undervoltage (degraded voltage) timer bypass and shall verify operation of the degraded voltage 5-minute timer and inherent 7-second timer.

11. Verification of time delay setting between 3 and 9 seconds shall be performed during each refueling outage.

TSup 4.2.A-1 Note (a);

12. Trip units are functionally tested monthly (staggered one channel out of four every week). A calibration of the trip units is to be performed concurrent with the functional testing.

TSup 4.2.B-1 Note (e)

13. Trip units are functionally tested monthly (staggered one division out of two every two weeks). A calibration of the trip units is to be performed concurrent with the functional testing.

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Relocated TO ODCM per GL 89-01

TABLE 4.2.2

RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Instrument Check (1)(7)	Calibration (1)(7)(3)(4)	Functional Test (1)(2)(7)	Source Check (1)
Liquid Radwaste Effluent Gross Activity Monitor	D	R, E	Q (6)	(5)
Service Water Effluent Gross Activity Monitor	D	R	Q (6)	R
Tank Level Indicating Device				
a. A Waste Sample Tank	D	R	Q	N/A
b. B Waste Sample Tank	D	R	Q	N/A
c. C Waste Sample Tank	D	R	Q	N/A
d. A Floor Drain Sample Tank	D	R	Q	N/A
e. B Floor Drain Sample Tank	D	R	Q	N/A
f. Waste Surge Tank	D	R	Q	N/A

Notes:
(See Next Page)

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ODCM TABLE 12.2-2 ITEMS 1 & 2

OPEN ITEM

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Relocated to ODCM per GL89-01

TABLE 4.2.2 (Notes)

1. D = Once per 24 hours
   M = Once per 31 days
   Q = Once per 92 days
   R = Once per refueling outage
   S = Once per 6 months

DELETED

ODCM TABLE 12.2-2 NOTE (a)

2. The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable.

   a. Instrument indicates levels above the alarm setpoint.
   b. Circuit Failure.
   c. Instrument indicates a downscale failure.
   d. Instrument controls not set in OPERATE mode.

NOTE (b)

3. Calibration shall include performance of a functional test.

NOTE (c)

4. Calibration shall include performance of a source check.

5. Source check shall consist of observing instrument response during a discharge.

NOTE (d)

6. Functional test may be performed by using trip check and test circuitry associated with the monitor chassis.

NOTE (e)

7. ~~Function test calibrations~~ and instrument checks are not required when these instruments are not required to be operable or are tripped. Calibration shall be performed once per refueling outage and not more than once every 18 months. Instrument checks shall be performed at least once a day during those periods when the instruments are required to be operable.

NOTE (f)

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Relocated to ODCM per GL 99-01

ODCM TABLE 12.2-4

TABLE 4.2.3

RADIOACTIVE GASEOUS EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Instrument Check (1)(6)	Calibration (1)(6)(3)	Function Test (1)(4)(2)(6)	Source Check (1)
Off-Gas Radiation Activity Monitor	D	R	Q	R
Reactor Bldg Vent Particulate and Iodine Sampler	D (4)	N/A	N/A	N/A
Reactor Bldg Vent Exhaust Duct Radiation Monitor	D	R (E)	Q	Q
Reactor Bldg Vent SPING Noble Gas Monitor Lo, Mid, High Range	D	R (E)	Q	M
Main Chimney Noble Gas Activity Monitor	D	R (E)	Q	M
Main Chimney SPING Noble Gas Monitor Lo, Mid, High Range	D	R (E)	Q	M
Main Chimney Particulate and Iodine Sampler	D (4)	N/A	N/A	N/A
Main Chimney Flow Rate Monitor	D	R (E)	Q	N/A
Main Chimney Sampler Flow Rate Monitor	D	R (E)	Q (5)	N/A
Reactor Bldg Vent Flow Rate Monitor	D	R (E)	Q	N/A
Reactor Bldg Sampler Flow Rate Monitor	D	R (E)	Q (5)	N/A
MVRS Process Exhaust Iodine and Particulate Sampler	D (7)	N/A	N/A	N/A
MVRS HVAC Exhaust Iodine and Particulate Sampler	D (7)	N/A	N/A	N/A

Item 10 → Reactor Bldg Vent Particulate and Iodine Sampler
Item 6 → Reactor Bldg Vent Exhaust Duct Radiation Monitor
Item 7 → Reactor Bldg Vent SPING Noble Gas Monitor Lo, Mid, High Range
Item 1 → Main Chimney Noble Gas Activity Monitor
Item 2 → Main Chimney SPING Noble Gas Monitor Lo, Mid, High Range
Item 3 → Main Chimney Particulate and Iodine Sampler
Item 4 → Main Chimney Flow Rate Monitor
Item 5 → Main Chimney Sampler Flow Rate Monitor
Item 8 → Reactor Bldg Vent Flow Rate Monitor
Item 9 → Reactor Bldg Sampler Flow Rate Monitor

Per Item

Notes: (See Next Page)

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TABLE 4.2.3 (Notes)

1. D = Once per 24 hours
   M = Once per 31 days
   Q = Once per 92 days
   R = Once per refueling outage

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2. The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable.

   a. Instrument indicates levels above the alarm setpoint.
   b. Circuit Failure.
   c. Instrument indicates a downscale failure.
   d. Instrument controls not set in OPERATE mode.

TABLE 12.2-4 NOTE (a)

3. Calibration shall include performance of a functional test.

NOTE (b)

4. Instrument check to verify operability of sampler; that the sampler is in place and functioning properly.

NOTE (c)

5. Function Test shall be performed on local switches providing low flow alarm.

NOTE (d)

6. Function test calibrations and instrument checks are not required when these instruments are not required to be operable or are tripped. Calibration shall be performed once per refueling outage and not more than once every 18 months. Instrument checks shall be performed at least once per day during those periods when the instruments are required to be operable.

7. Instrument check to verify operability of sampler; that the sampler is in place and functioning properly prior to use of the Mobile Volume Reduction System (MVRS).

NOTE (e)

RELOCATED TO ODCM PER GL 89-01

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DELETED, INCORPORATED INTO TSUP TABLE 4.2.F-1, col. 3

STS TABLE 4.3.7.5-1
TSUP TABLE 4.2.F-1

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Table 4.2.4

Post Accident Monitoring Instrumentation Surveillance Requirements

Minimum Number of Operable Channels	Parameter (Col. 1)	Instrument Readout Location Unit 2	Calibration (Col. 3)	Instrument Check (Col. 2)
1	Reactor Pressure (Item 1.)	902-3,5	Once Every 6 Months	Once Per Day
1	Reactor Water Level (Item 2)	902-3,5	Once Every 6 Months	Once Per Day
1	Torus Bulk Water Temperature (Item 4)	902-4,37	Once Every 12 Months	Once Per Day
	Torus Water Level Indicator (Narrow Range)	902-3	Once Every 6 Months	Once Per Day
2	(Sight Glass)		N/A	None (DELETED)
	(Wide Range)	902-2	Once Every 12 Months	Once Per 31 Days
1	Torus Pressure (ITEM 3)	902-3,5	Once Every 3 Months	Once Per Day
1	Torus to Drywell Differential Pressure (OPEN ITEM)	902-3	Once Every 6 Months	Once Per Day
2	Drywell Pressure (0-5 psig) (TSUP Items 5 & 6)	902-5	Once Every 3 Months	Once Per Day
	(-5 to +70 psig) (TSUP 4.7.H)	902-3	Once Every 3 Months	Once Per 31 Days
	(-5 to 250 psig) (Item 7)	902-3	Once Every Refuel	Once Per 31 Days
2	Drywell Temperature (Item 11)	902-3	Once Every Refuel	Once Per Day
2	Neutron Monitoring	902-5	Once Every 3 Months	Once Per Day
1	Drywell Radiation Monitor (Item 12)	902-55,56	Once Every Refuel (2)	Once Per 31 Days
1/Valve	Main Steam RV Position, Temperature Monitor (Item 10)	902-21	Once Every Refuel	Once Per 31 Days
1/Valve	Acoustic Monitor	902-21	(1)	Once Per 31 Days
1/Valve	Main Steam SV Position, Temperature Monitor	902-21	Once Every Refuel	Once Per 31 Days
1/Valve	Acoustic Monitor	902-21	(1)	Once Per 31 Days
1	Drywell Hydrogen Concentration (Item 9)	902-55 902-56	Once Every 3 Months	Once Per 31 Days

Notes: (See Next Page)

Table 4.2.4 (Notes)

STS TABLE 4.3.7.5-1 col. 2
TSUP TABLE 4.2.F-1, col. 2

Notes

1. Calibration of Acoustic Monitors shall consist of verifying the instrument threshold levels, and will be performed monthly.

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~~Functional tests will be conducted before startup at the end of each refueling outage or after maintenance is performed on a particular safety or relief valve.~~

2. Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr; and a one-point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

STS 4.3.7.5-1 note **
TSUP 4.2.F-1 note (b)

FOR INFORMATION ONLY

STS TABLE 4.3.4.1-1
TSUP TABLE 4.2.C-1

Table 4.2.5

MINIMUM TEST AND CALIBRATION FREQUENCY FOR THE RECIRCULATION PUMP TRIP

Col. 1 Col. 4 Col. 2

Instrument Channel	Instrument Functional Test	Calibration	Instrument Check	Applicable Operational Mode
Item 2 1. Reactor High Pressure	Q	R	D	1*
Item 1 2. Reactor Low Low Water Level	Q	R	D	1*

*MODE 1 is the RUN MODE

DELETED

Col. 3

3.2.C Applicability

STS 3.3.2; 3.3.3; 3.3.4.1; 3.3.5; 3.3.6; 3.3.7.5; 3.3.7.6; 3.3.7.8; 3.3.9
TSuP 3.2.A, B, C, D, E, F, G, H, I, J, K

STS 4.3.2; 4.3.3; 4.3.4.1; 4.3.5; 4.3.6; 4.3.7.5; 4.3.7.6; 4.3.7.8; 4.3.9
TSuP 3.2.A, B, C, D, E, F, G, H, I, J, K

3.2/4.2 PROTECTIVE INSTRUMENTATION

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
Applicability:	**Applicability:**
Applies to the plant instrumentation which performs a protective function.	Applies to the surveillance requirements of the instrumentation that performs a protective function.
Objective:	**Objective:**
To assure the operability of protective instrumentation.	To specify the type and frequency of surveillance to be applied to protective instrumentation.

STS 3.3.2
TSuP 3.2.A

STS 4.3.2
TSuP 3.2.A

SPECIFICATIONS

A. Primary Containment Isolation Functions When primary containment integrity is required, the limiting conditions of operation for the instrumentation that initiates primary containment isolation are given in Table 3.2-1.	A. Primary Containment Isolation Functions Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2-1.
B. Core and Containment Cooling Systems - Initiation and Control The limiting conditions for operation for the instrumentation that initiates or controls the core and containment cooling systems are given in Table 3.2-2. This instrumentation must be operable when the system(s) it initiates or controls are required to be operable as specified in Specification 3.5.	B. Core and Containment Cooling Systems - Initiation and Control Instrumentation and logic systems shall be functionally tested and calibrated as indicated in Table 4.2-1.
C. Control Rod Block Actuation 1. The limiting conditions of operation for the instrumentation that initiates control rod block are given in Table 3.2-3.	C. Control Rod Block Actuation Instrumentation and Logic systems shall be functionally tested and calibrated as indicated in Table 4.2-1.

STS 3.3.3
TSuP 3.2.B

STS 4.3.3
TSuP 4.2.B

STS 3.3.6
TSuP 3.2.E

STS 4.3.6
TSuP 4.2.E

FOR INFORMATION ONLY

2. The minimum number of operable instrument channels specified in Table 3.2-3 for the rod block monitor may be reduced by one in one of the trip systems for maintenance and/or testing, provided that this condition does not last longer than 24 hours in any 30-day period. If this condition exists for more than 24 hours in a 30-day period, the system shall be tripped.

DELETED

D. Refueling Floor Radiation Monitors

1. Except as specified in Specification 3.2.D.2, the two refueling floor radiation monitors shall be operable whenever irradiated fuel or components are present in the fuel storage pool and during refueling or fuel movement operations.

2. One of the two refueling floor radiation monitors may be inoperable for 24 hours. If the inoperable monitor is not restored to service in this time, the reactor building ventilation system shall be isolated and the standby gas treatment operated until repairs are complete.

3. The trip setting for the refueling floor radiation monitors shall be set at a value of ≤ 100 mR/hr.

4. Upon loss of both refueling floor radiation monitors while in use, the reactor building ventilation system shall be isolated and the standby gas treatment operated.

D. Refueling Floor Radiation Monitors

The two refueling floor radiation monitors shall be functionally tested and calibrated as indicated in Table 4.2-1. Reactor building ventilation isolation and standby gas treatment system initiation shall be performed at least each operating cycle.

STS TABLE 3.3.2-1 ITEM 2.e
TSUP TABLE 3.2.A-1 ITEM 2.d

STS TABLE 4.3.2.1-1 ITEM 2.e
TSUP TABLE 4.2.A-1 ITEM 2.d

STS 3.3.2 ACTION e
TSUP 3.2.A ACTION 3

TSUP 4.7.P.4.b.1) and TSUP 4.7.P.4.b.2)

TSUP 4.7.D.2

STS TABLE 3.3.2-2; COL 3., ITEM 2.e
TSUP TABLE 3.2.A-1 COL 2, ITEM 2.d

STS 3.3.2, ACTION C
STS TABLE 3.3.2-1, ACTION 26
TSUP 3.2.A, ACTION 3
TSUP TABLE 3.2.A-1, ACTION 24

FOR INFORMATION ONLY

STS 3.3.7.5
TSUP 3.2.F

STS 4.3.7.5
TSUP 4.2.F

E. Postaccident Instrumentation The limiting conditions for operation for the instrumentation which is read out in the control room, required for postaccident monitoring are given in Table 3.2-4.	E. Postaccident Instrumentation Postaccident instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-2.
F. Control Room Ventilation System Isolation 1. The control room ventilation systems are isolated from outside air on a signal of high drywell pressure, low water level, high main steamline flow, high toxic gas concentration, high radiation in either of the reactor building ventilation exhaust ducts, or manually. Limiting conditions for operation shall be as indicated in Table 3.2-1 and Specification 3.2.H. and 3.2.F.2.	F. Control Room Ventilation System Isolation 1. Surveillance for instrumentation which initiates isolation of control room ventilation shall be as specified in Table 4.2-1.
2. The toxic gas detection instrumentation shall consist of an ammonia analyzer with a trip setpoint set at ≤ 50 ppm: The provisions of Specification 3.0.A. are not applicable.	2. Manual isolation of the control room ventilation system shall be demonstrated once every refueling outage.

TSUP TABLE 3.2.A-1 NOTE (K), modifying Items 2.a, 2.b, 2.c, 2.d, & 3.d; TSUP 3.2.K

TSUP TABLE 4.2.A-1 NOTE (d), modifying Items 2.a, 2.b, 2.c, 2.f & 3.d; TSUP 4.2.K

TSUP 3.2.K

TSUP 4.8.D.5.b

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G. Radioactive Liquid Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-5 shall be operable with alarm setpoints set to ensure that the limits of Specification 3.8.B are not exceeded. The alarm setpoints shall be determined in accordance with the ODCM.

1. With a radioactive liquid effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive liquid effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

2. With one or more radioactive liquid effluent monitoring instruments inoperable, take the action shown in Table 3.2-5. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC, and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

G. Radioactive Liquid Effluent Instrumentation

Each radioactive liquid effluent monitoring instrument shown in Table 4.2-3 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequencies shown in Table 4.2-3.

ODCM QUAD CITIES ANNEX 12.2.1.A

ODCM 12.2.1.A.1

ODCM 12.2.1.A.2

ODCM 12.2.1.A.3

ODCM 12.2.1.B

FOR INFORMATION ONLY

Relocated to ODCM per GL 89-01

H. Radioactive Gaseous Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-6 shall be operable with alarm/trip setpoints set to ensure that the limits of Specification 3.8.A are not exceeded. The alarm/trip setpoints shall be determined in accordance with the ODCM.

ODCM 12.2.2.A

1. With a radioactive gaseous effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive gaseous effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

ODCM 12.2.2.A.1

2. With one or more radioactive gaseous effluent monitoring instruments inoperable, take the action shown in Table 3.2-6. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

ODCM 12.2.2.A.2

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

ODCM 12.2.2.A.3

H. Radioactive Gaseous Effluent Instrumentation

Each radioactive gaseous radiation monitoring instrument in Table 4.2-4 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequency shown in Table 4.2-4.

ODCM 12.2.2.B

FOR INFORMATION ONLY

STS 3.3.2-1 col.3
TSUP 3.2.A-1 col.3

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STS TABLE 3.3.2-1
TSUP TABLE 3.2.A-1

TABLE 3.2-1

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION FUNCTIONS

STS & TSUP col. 1

FOR INFORMATION ONLY

STS TABLE 3.3.2-1
TSUP TABLE 3.2.A-1 col. 2

col. 5

Minimum Number of Operable or Tripped Instrument Channels [1]	Instruments	Trip Level Setting	Action[2]
4 (STS ITEMS 1a, 2a, 4e, & 7a; TSUP ITEMS 1a, 2a, 4b, & 7a)	Reactor low water[5]	>144 inches above top of active fuel*	A
4 (STS & TSUP ITEM 2a.)	Reactor low low water	≥84 inches above top of active fuel*	A
	(STS & TSUP ITEMS 1b. and 2b)		
4 (STS & TSUP ITEM 3d.)	High drywell pressure[5]	≤2.5 psig [3]	A
16 (STS & TSUP ITEM 3e)	High flow main steamline[5]	≤140% of rated steam flow	B
16 (STS & TSUP ITEM 3b)	High temperature main steamline tunnel	≤200°F	B
4 (STS & TSUP ITEM 3c)	High radiation main steamline tunnel[6]	≤15 x normal rated power background (without hydrogen addition)	B
4 (TSUP ITEM 5a)	Low main steam pressure[4]	≥825 psig	B
2 (STS & TSUP ITEM 5c)	High flow RCIC steamline	≤300% of rated steam flow[7]	C
4 (STS & TSUP ITEM 6a)	RCIC turbine area high temperature	≤170°F	C
2 (STS ITEM 6d; TSUP ITEM 6c) 4	High flow HPCI steamline	≤300% of rated steam flow[7]	D
TSUP ITEM 6b. 4	HPCI area high temperature	≤170°F	D
	HPCI Steamline pressure	≥100 psig	D

Notes

[1] Whenever primary containment integrity is required, there shall be two operable or tripped systems for each function, except for low pressure main steamline which only need be available in the Run position.

STS 3.3.2; ACTIONS b & c
TSUP 3.2.A; ACTIONS 2 & 3

FOR INFORMATION ONLY

STS 3.3.2 ACTION b
TSUP 3.2.A ACTION 2

[2] Action, if the first column cannot be met for one of the trip systems, that trip system shall be tripped.

STS 3.3.2 ACTION C
TSUP 3.2.A ACTION 3

If the first column cannot be met for both trip systems, the appropriate actions listed below shall be taken.

STS 3.3.2-1 ACTION 20
TSUP 3.2.A-1 ACTION 20

A. Initiate an orderly shutdown and have the reactor in Cold Shutdown condition in 24 hours.

B. Initiate an orderly load reduction and have reactor in Hot Standby within 8 hours.

STS & TSUP ACTION 21

C. Close isolation valves in RCIC system.

STS & TSUP ACTION 23

D. Close isolation valves in HPCI subsystem.

[3] Need not be operable when primary containment integrity is not required.

[4] The isolation trip signal is bypassed when the mode switch is in Refuel or Startup/ Hot Standby.

[5] The instrumentation also isolates the control room ventilation system.

[6] This signal also automatically closes the mechanical vacuum pump discharge line isolation valves.

STS 3.3.2-1, NOTE (b)
TSUP 3.2.A-1, NOTE (b)

[7] Includes a time delay of $3 \leq t \leq 9$ seconds.

TSUP 3.2.A-1, NOTE (i)

* Top of active fuel is defined as 360" above vessel zero for all water levels used in the LOCA analysis (see Bases 3.2).

TSUP 3.2.A-1, NOTE (d)

TSUP 3.2.A-1 NOTE (K)

TSUP 3.2.A-1 NOTE (j)

INCORPORATED INTO Applicable OP. modes TSUP 3.2.A-1, col. 4 ITEM 3c.

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STS TABLE 3.3.3-1
TSUP TABLE 3.2.B-1

STS 3.3.3-1 Col 2. TSUP 3.2.B-1 Col 3.

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TABLE 3.2.2

INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT COOLING SYSTEMS

STS 3.3.3-2, col. 3
TSUP 3.2.B-1 col. 2

col. 1

Minimum Number of Operable or Tripped Instrument Channels[1]	Trip Function	Trip Level Setting	Remarks
4	Reactor low low water level	≥84 inches above top of active fuel*	1. In conjunction with low-reactor pressure initiates core spray and LPCI. 2. In conjunction with high-drywell pressure 120-second time delay and low-pressure core cooling interlock initiates auto blowdown. 3. Initiates HPCI and RCIC. 4. Initiates starting of diesel generators.
4[4]	High-drywell pressure[2],[3]	≤2.5 psig	1. Initiates core spray, LPCI, HPCI, and SBGTS. 2. In conjunction with low low water level, 120-second time delay, and low-pressure core cooling interlock initiates auto blowdown. 3. Initiates starting of diesel generators. 4. Initiates isolation of control room ventilation.
2	Reactor low pressure	300 psig≤p≤350 psig	1. Permissive for opening core spray and LPCI admission valves. 2. In conjunction with low low reactor water level initiates core spray and LPCI.
2[3] 4[3]	Containment spray interlock		Prevents inadvertent operation of containment spray during accident conditions.
2[3] 4[3]	2/3 core height containment high pressure	≥2/3 core height 0.5 psig≤p≤1.5 psig	
2	Timer auto blowdown	≤120 seconds	In conjunction with low low reactor water level, high-drywell pressure, and low-pressure core cooling interlock initiates auto blow-down.

STS ITEMS 1a, 2a, 3a, 4a
TSUP ITEMS 1a, 2a, 3a, 4a, 5a

STS ITEMS 1b, 2b, 3b, 4b
TSUP ITEMS 1b, 2b, 3b, 4b, 5b

STS ITEMS 1c, 2c
TSUP ITEMS 1c, 2c

STS TABLE 3.3.9-1, ITEMS A and C
TSUP TABLE 3.2.I-1 ITEMS 1 and 2

STS ITEM 4c.
TSUP ITEMS 4c and 5c.

DELETE

* Top of active fuel is defined at 360" above vessel zero for all water levels used in the LOCA analysis

3.2.B-1, note (n)

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STS col 2
TSUP col 3

TABLE 3.2-2 (Cont'd)

Minimum Number of Operable or Tripped Instrument Channels[1]	Trip Function	Trip Level Setting	Remarks
4 (STS items 4e and 4f; TSUP items 4e, 4f, 5e and 5f)	Low-pressure core cooling pump discharge pressure	100 psig≤p≤150 psig	Defers APR actuation pending confirmation of low-pressure core cooling system operation.
2/BUS [5]	Undervoltage on emergency buses (STS Item 5.1; TSUP Item 6.a)	3045 ±5% volts	1. Initiates starting of diesel generators. 2. Permissive for starting ECCS pumps. 3. Removes nonessential loads from buses. 4. Bypasses degraded voltage timer.
2/BUS[5]	Degraded Voltage on 4 KV Emergency Buses (STS Item 5.2; TSUP Item 6.b)	3840 volts ±2% with 5 ±5% minute time delay and 7 ± 20% second inherent time delay	Initiates alarm and picks up time delay relay. Diesel Generator picks up load if degraded voltage not corrected after time delay.

col 1

STS 3.3.3-2, col 3
TSUP 3.2.B-1, col 2

Delete

STS 3.3.3, ACTION b; STS 3.3.3-1, ACTIONS 30 TO 36
TSUP 3.2.B, ACTION 2; TSUP 3.2.B-1, ACTIONS 30-36

NOTES

[1] For all positions of the reactor mode selector switch (except for the containment interlock) whenever any ECCS subsystem is required to be operable, there shall be two operable trip systems. If the first column cannot be met for one or both of the trip systems, the systems actuated shall be declared inoperable and Specifications 3.5 or 3.9 shall govern.

TSUP 3.2.B-1 note (f)

[2] Need not be operable when primary containment integrity is not required.

[3] If an instrument is inoperable, it shall be placed (or simulated) in the tripped condition so that it will not prevent containment spray.

TSUP TABLE 3.2.I-1, note (b)

[4] There are a total of eight high drywell pressure sensors. Four are used for core spray and LPCI initiation, and four are used for HPCI and auto blowdown initiation. This specification applies to each set of four sensors.

[5] With the number of operable channels one less than the total number of channels, operation may proceed until performance of the next required functional test, provided the inoperable channel is placed in the tripped condition within one hour.

Delete

STS 3.3.3-1, ACTIONS 38 - delete IN TSUP

STS TABLE 3.3.6-1
TSUP TABLE 3.2.E-1

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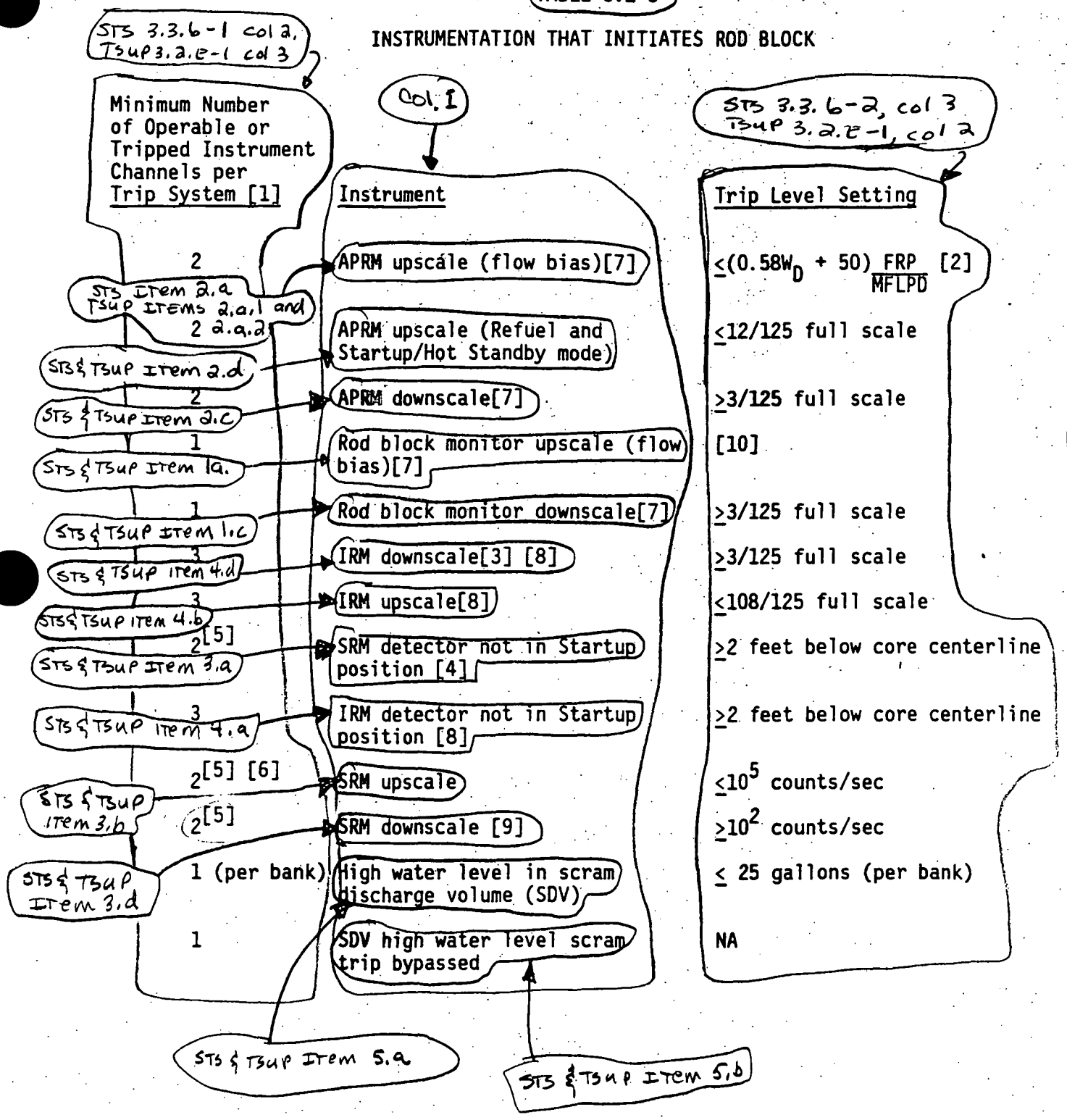
TABLE 3.2-3

INSTRUMENTATION THAT INITIATES ROD BLOCK



FOR INFORMATION ONLY

TABLE 3.2-3 (Con't)

Notes

[1] For the Startup/Hot Standby and Run positions of the reactor mode selector switch, there shall be two operable or tripped trip systems for each function except the SRM rod blocks. IRM upscale and IRM downscale need not be operable in the Run position, APRM downscale, APRM upscale (flow biased), and RBM downscale need not be operable in the Startup/Hot Standby mode. The RBM upscale need not be operable at less than 30% rated thermal power. One channel may be bypassed above 30% rated thermal power provided that a limiting control rod pattern does not exist. For systems with more than one channel per trip system, if the first column cannot be met for one of the two trip systems, this condition may exist for up to 7 days provided that during that time the operable system is functionally tested immediately and daily thereafter; if this condition lasts longer than 7 days the system shall be tripped. If the first column cannot be met for both trip systems, the systems shall be tripped.

[2] W_D is the percent of drive flow required to produce a rated core flow of 98 million lb/hr. Trip level setting is in percent of rated power (2511 MWt).

[3] IRM downscale may be bypassed when it is on its lowest range.

[4] This function is bypassed when the count rate is > 100CPS.

[5] One of the four SRM inputs may be bypassed.

[6] This SRM function may be bypassed in the higher IRM ranges (ranges 8, 9, and 10) when the IRM upscale rod block is operable.

[7] Not required to be operable while performing low power physics tests at atmospheric pressure during or after refueling at power levels not to exceed 5MWt.

[8] This IRM function occurs when the reactor mode switch is in the Refuel or Startup/Hot Standby position.

[9] This trip is bypassed when the SRM is fully inserted.

[10] The Rod Block Monitor upscale setpoint shall be established as specified in the CORE OPERATING LIMITS REPORT.

INCORPORATED INTO Col.3

INCORPORATED INTO Col.4

STS 3.3.6-1 note(a) TSUP 3.2.E-1 note(a)

STS ACTIONS 61 & 62 TSUP ACTIONS 51 & 52

TSUP 3.2.E-1 NOTE (h)

STS 3.3.6-1, note (e) TSUP 3.2.E-1, note (e)

STS & TSUP note (b)

INCORPORATED INTO Col. 3

STS & TSUP NOTE (c)

TSUP 3.12.A

INCORPORATED INTO Col. 3

DELETED

INCORPORATED INTO Col. 2

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STS TABLE 3.3.7.5-1
TSUP TABLE 3.2.F-1

TABLE 3.2-4

STS & TSUP col. 3

POSTACCIDENT MONITORING INSTRUMENTATION REQUIREMENTS[2]

Minimum Number of Operable Channels[1] [3]	Parameter	Instrument Readout Location Unit 1	Number Provided	Range
	STS & TSUP col. 1	DELETED	STS & TSUP col. 2	
	ITEM 1			
1	Reactor pressure	901-5	1 2	0-1500 psig 0-1200 psig
	ITEM 2			
1	Reactor water level	901-3	2	-243 inches +57 inches
	ITEM 4			
1	Torus water temperature	901-21	2	0-200°F
	ITEM 13			
1	Torus air temperature	901-21	2	0-600°F Deleted
ITEM 3	Torus water level indicator	901-3	1	-5 inches +5 inches (narrow range)
2[6]	Torus water level indicator	901-3	2	0-30 feet (wide range)
	Torus water level sight glass		1	18 inch range (narrow range)
1 OPEN ITEM	Torus pressure	901-3	1	-5 inches Hg to 5 psig
			TSUP ITEM 6	
2	Drywell pressure	901-3	1	-5 inches Hg to 5 psig
	STS ITEM 6 TSUP ITEMS 5 & 6	TSUP ITEM 5	TSUP ITEM 6	-10 inches Hg to 70 psig
			2	0 to 250 psig
TSUP ITEM 11	ITEM 7			
2	Drywell temperature	901-21	6	0-600°F
2	Neutron monitoring	901-5	4	$0.1-10^8$ CPS
2[4]	Torus to drywell differential pressure	3.7.H	2	0-3 psid
1[8]	Drywell Hydrogen concentration	901-55, 56	2	0-4%
2[7]	Drywell radiation monitor	901-55, 56	2	1 to 10^8 R/hr

ITEM 9

ITEM 12

NOTE: ITEM NUMBERS refer to both STS & TSUP, UNLESS SPECIFICALLY DIFFERENTIATED

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STS & TSUP col. 3

TABLE 3.2-4 (Cont'd)

ITEM 10

STS & TSUP col. 1

DELETED

STS & TSUP col. 2

Minimum Number of Operable Channels[1] [3]	Parameter	Instrument Readout Location Unit 1	Number Provided	Range
2/valve[5]	Main Steam RV position, acoustic monitor	901-21	1 per valve	NA
	Main Steam RV position, temperature monitor	901-21	1 per valve	0-600°F
2/valve[5]	Main Steam SV position, acoustic monitor	901-21	1 per valve	NA
	Main Steam SV position, temperature monitor	901-21	1 per valve	0-600°F

STS ACTION 80
TSUP ACTION 60

INCORPORATED INTO TSUP ACTIONS 60, 61, 62 & 63

Notes

[1] Instrument channels required during power operation to monitor postaccident conditions.

[2] Provisions are made for local sampling and monitoring of drywell atmosphere. Deleted

[3] In the event any of the instrumentation becomes inoperable for more than 7 days during reactor operation, initiate an orderly shutdown and be in the cold shutdown condition within 24 hours. See notes 4, 5, 6, 7, and 8 for exceptions to this requirement.

STS ACTION 80.a
TSUP ACTION 60.a

[4] From and after the date that one of these parameters is reduced to one indication, continued operation is not permissible beyond thirty days unless such instrumentation is sooner made operable. In the event that all indication of these parameters is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in twenty-four (24) hours.

STS ACTION 80.b
TSUP ACTION 60.b

[5] If the number of position indicators is reduced to one indication on one or more valves, continued operation is permissible; however, if the reactor is in a cold shutdown condition for longer than 72 hours, it may not be started up until all position indication is restored. In the event that all position indication is lost on one or more valves and such indication cannot be restored in 30 days, an orderly shutdown shall be initiated, and the reactor shall be depressurized to less than 90 psig in 24 hours.

TSUP ACTION 63.a

TSUP ACTION 63.b

FOR INFORMATION ONLY

STS ACTION 80.a
TSUP ACTION 60.a

TABLE 3.2-4 (Cont'd)

6. From and after the date that this parameter is reduced to either one narrow-range indication or one wide-range indication, continued reactor operation is not permissible beyond 30 days unless such instrument is sooner made operable. In the event that either all narrow-range indication or all wide-range indication is disabled, continued reactor operation is not permissible beyond 7 days unless such instruments are sooner made operable. In the event that all indication for this parameter is disabled, and such indication cannot be restored in 6 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in 24 hours.

STS ACTION 80.b
TSUP ACTION 60.b

7. With less than the minimum number of operable channels, initiate the pre-planned alternate method of monitoring this parameter within 72 hours, and:

   a. Either restore the inoperable channel(s) to operable status within 7 days of the event, or

   b. Prepare and submit a special report to the NRC within 30 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

STS ACTION 81
TSUP ACTION 61

8. From and after the date that one of the drywell hydrogen monitors becomes inoperable, continued reactor operation is permissible.

   a. If both drywell hydrogen monitors are inoperable, continued reactor operation is permissible for up to 30 days provided that during this time the HRSS hydrogen monitoring capability for the drywell is operable.

   b. If all drywell hydrogen monitoring capability is lost, continued reactor operation is permissible for up to 7 days.

TSUP ACTION 62

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TABLE 3.2-5

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels	Total No. of Channels	Parameter	Action
1	1	Service Water Effluent Gross Activity Monitor	A
1	1	Liquid Radwaste Effluent Flow Rate Monitor	C
1	1	Liquid Radwaste Effluent Gross Activity Monitor	B

ODCM TABLE 12.2-1 ITEMS 1, 2, & 3

Notes

Action A: With less than the minimum number of operable channels, releases via this pathway may continue, provided that at least once per 12 hours grab samples are collected and analyzed for beta or gamma activity at an LLD of less than or equal to 10^{-7} uCi/ml.

Action B: With less than the minimum number of operable channels, effluent releases via this pathway may continue, provided that prior to initiating a release, at least 2 independent samples are analyzed in accordance with Specification 4.8.B.1, and at least 2 members of the facility staff independently verify the release calculation and discharge valving. Otherwise, suspend release of radioactive effluents via this pathway.

Action C: With less than the minimum number of operable channels, releases via this pathway may continue, provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be utilized to estimate flow.

ODCM 12.2-1 ACTION C

ODCM 12.2-1 ACTION A

ODCM 12.2-1 ACTION B

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ODCM TABLE 12.2-3

TABLE 3.2-6

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels [1]	Total No. of Channels	Parameter	Action [2]
1	2	SJAE Radiation Monitors	D
1	2	Main Chimney Noble Gas Activity Monitor	A
1	1	Main Chimney Iodine Sampler	C
1	1	Main Chimney Particulate Sampler	C
1	1	Reactor Bldg. Vent Sampler Flow Rate Monitor	B
1	1	Reactor Bldg. Vent Iodine Sampler	C
1	1	Reactor Bldg. Vent Particulate Sampler	C
1	1	Main Chimney Sampler Flow Rate Monitor	B
1	1	Main Chimney Flow Rate Monitor	B
1	2	Reactor Bldg. Vent Noble Gas Monitor	E
1	1	Main Chimney High Range Noble Gas Monitor	F

FOR INFORMATION ONLY

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Notes

[1] For SJAE monitors, applicable during SJAE operation. For other instrumentation, applicable at all times.

[2] Action A: With the number of operable channels less than the minimum requirement, effluent releases via this pathway may continue, provided grab samples are taken at least once per 8 hour shift and these samples are analyzed within 24 hours.

RELOCATED TO ODCM PER GL 89-01

ODCM TABLE 12.2-3

TABLE 3.2-6 (Cont'd)

Action B: With the number of operable channels less than the minimum required, effluent releases via this pathway may continue provided that the flow rate is estimated at least once per 4 hours.

Action C: With less than the minimum channels operable, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment, as required in Table 4.8-1.

Action D: With less than the minimum channels operable, gases from the main condenser off gas system may be released to the environment for up to 72 hours provided at least one chimney monitor is operable; otherwise, be in hot stand-by in 12 hours.

Action E: With less than the minimum channels operable, immediately suspend release of radioactive effluents via this pathway.

Action F: With less than the minimum channels operable, initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours, and:

(1) Either restore the inoperable channel(s) to operable status within 7 days of the event, or

(2) Prepare and submit a Special Report to the Commission within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

FOR INFORMATION ONLY

STS TABLES 4.3.2.1-1; 4.3.3-1; 4.3.6-1; 4.3.7.5-1
TSUP TABLES 4.2.A-1; 4.2.B-1; 4.2.E-1; 4.2.F-1

STS TABLE 4.3.3-1
TSUP TABLE 4.2.B-1

QUAD-CITIES
DPR-29

TABLE 4.2-1

FOR INFORMATION ONLY

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS INSTRUMENTATION, ROD BLOCKS, AND ISOLATIONS[7]

Instrument Channel	Instrument Functional Test [2]	Calibration[2]	Instrument Check [2]
ECCS Instrumentation			
1. Reactor low-low water level	[1]	Once/3 months	Once/day
2. Drywell high pressure	[1]	Once/3 months	None
3. Reactor low pressure	[1]	Once/3 months	None
4. Containment spray interlock			
a. 2/3 core height	[1] [10]	[10]	None
b. Containment pressure	[1]	Once/3 months	None
5. Low pressure core cooling pump discharge	[1]	Once/3 months	None
6. Undervoltage 4-KV essential buses	Refueling outage	Refueling outage	None
7. Degraded voltage 4-KV essential buses	Refueling outage [8]	Refueling outage	Once/month
Rod Blocks			
1. APRM downscale	[1] [3]	Once/3 months	None
2. APRM flow variable	[1] [3]	Refueling outage	None
3. IRM upscale	[5] [3]	[5] [3]	None
4. IRM downscale	[5] [3]	[5] [3]	None
5. RBM upscale	[1] [3]	Refueling outage	None
6. RBM downscale	[1] [3]	Once/3 months	None
7. SRM upscale	[5] [3]	[5] [3]	None
8. SRM detector not in startup position	[5] [3]	[6]	None
9. IRM detector not in startup position	[5]	[6]	None
10. SRM downscale	[5] [3]	[5] [3]	None
11. High water level in scram discharge volume (SDV)	Once/3 months	Not applicable	None
12. SDV high level trip bypassed	Refueling outage	Not applicable	None
Main Steamline Isolation			
1. Steam tunnel high temperature	Refueling outage	Refueling outage	None
2. Steamline high flow	[1]	Once/3 months	Once/day
3. Steamline low pressure	[1]	Once/3 months	None
4. Steamline high radiation	[1] [4]	Refueling outage	Once/day
5. Reactor low low water level	[1] [10]	[10]	Once/day

FOR INFORMATION ONLY

STS TABLE 4.3.6-1
TSUP TABLE 4.2.E-1

STS 4.3.2-1
TSUP TABLE 4.2.A-1

FOR INFORMATION ONLY

TABLE 4.2-1 (Cont'd)

Instrument Channel	Instrument Functional Test [2]	Calibration [2]	Instrument Check [2]
RCIC Isolation			
1. Steamline high flow	Once/3 months[9]	Once/3 months[9]	None
2. Turbine area high temperature	Refueling outage	Refueling outage	None
3. Low reactor pressure	Once/3 months	Once/3 months	None
HPCI Isolation			
1. Steamline high flow	[1] [9][10]	[9][10]	None
2. Steamline area high temperature	Refueling outage	Refueling outage	None
3. Low reactor pressure	[1] [10]	[10]	None
Reactor Building Ventilation System Isolation and Standby Gas Treatment System Initiation			
1. Refueling floor radiation monitors	[1]	Once/3 months	Once/day
Steam Jet Air Ejector Off-Gas Isolation			
1. Off-gas radiation monitors	[1] [4]	Refueling outage	Once/day
Control Room Ventilation System Isolation			
1. Reactor low water level	[1]	Once/3 months	Once/day
2. Drywell high pressure	[1]	Once/3 months	None
3. Main steamline high flow	[1]	Once/3 months	Once/day
4. Toxic gas analyzer (ammonia)	Once/month	Once/18 months	Once/day

Notes

[1] Initially once per month until exposure hours (M as defined on Figure 4.1-1) are 2.0 X 10^{5}; thereafter, according to Figure 4.1-1 with an interval not less than 1 month nor more than 3 months. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instrument operates in an environment similar to that of Quad Cities Units 1 and 2.

[2] Functional tests, calibrations, and instrument checks are not required when these instruments are not required to be operable or tripped.

Incorporated into Applicable mode column and/or LCO Applicability

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TABLE 4.2-1 (Cont'd)

Incorporated into TSAP Table 4.2.A-1, col. 3 & 4, note (a)

DELETED

[3] This instrumentation is excepted from the functional test definition. The function test shall consist of injecting a simulated electric signal into the measurement channel.

[4] This instrument channel is excepted from the functional test definitions and shall be calibrated using simulated electrical signals once every 3 months.

[5] Functional tests shall be performed before each startup with a required frequency not to exceed once per week. Calibrations shall be performed during each startup or during controlled shutdowns with a required frequency not to exceed once per week.

Deleted

[6] The positioning mechanism shall be calibrated every refueling outage.

[7] Logic system functional tests are performed as specified in the applicable section for these systems.

[8] Functional tests shall include verification of operation of the degraded voltage 5 minute timer and 7 second inherent timer.

[9] Verification of the time delay setting of $3 \leq t \leq 9$ seconds shall be performed during each refueling outage.

[10] Trip units are functionally tested monthly. A calibration of the trip unit is to be performed concurrent with the functional testing. Transmitters are calibrated once per operating cycle.

Deleted

Incorporated into TSAP Table 4.2.E-1 col. 3 & 4

FOR INFORMATION ONLY

Incorporated into 4.2.A.2, 4.2.B.2 4.2.I.2,

Incorporated into Table 4.2.A-1, note (a); Table 4.2.B-1, note (e)

QUAD-CITIES
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STS Table 4.3.7.5-1
TSUP Table 4.2.F-1

TABLE 4.2-2

Deleted; incorporated into Table 3.2.F-1, col. 3

FOR INFORMATION ONLY

POSTACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Minimum Number of Operable Channels*	Parameter (Col. 1)	Deleted: Instrument Readout Location Unit 1	Col. 3: Calibration	Col. 2: Instrument Check
1	Reactor pressure (1)	901-5	Once every 3 months	Once per day
1	Reactor water level (2)	901-3	Once every 3 months	Once per day
1	Torus water temperature (4)	901-21	Once every 3 months	Once per day
1	Torus air temperature (13)	901-21	Once every 3 months	Once per day
Deleted	Torus water level indicator (narrow range)	901-3	Once every 3 months	Once per day
2 (3)	Torus water level indicator (wide range)	901-3	Once every 18 months	Once per 31 days
	Torus water level sight glass		N/A	None
1	Torus pressure	901-3	Once every 3 months	Once per day
2 (5 & 6)	Drywell pressure	901-3	Once every 3 months	Once per day
2 (7)	Drywell temperature	901-21	Once every 3 months	Once per day
2 (11)	Neutron monitoring	901-5	Once every 3 months	Once per day
2	Torus to drywell differential pressure (9)		Once every 6 months	None
1	Drywell Hydrogen concentration	901-55, 56	Once every 3 months	Once per 31 days
2 (12)	Drywell radiation monitor	901-55, 56	Once every *** 18 months	Once per 31 days
2/valve	Main Steam RV position, acoustic monitor	901-21	**	Once per 31 days
	Main Steam RV position, temperature monitor (10)	901-21	Once every 18 months	Once per 31 days

FOR INFORMATION ONLY

QUAD-CITIES
DPR-29

Incorporated into Table 3.2.F-1 col. 3

STS Table 4.3.7.5-1
TSUP Table 4.2.F-1

TABLE 4.2-2 (Con'd)

Minimum Number of Operable Channels*	Parameter	Instrument Readout Location Unit 1	Calibration	Instrument Check
	Main Steam SV Position, acoustic monitor	901-21	**	Once per 31 days
2/valve	Main Steam SV Position, temperature monitor	901-21	Once every 18 months	Once per 31 days

Col. 1 (10)

Deleted

Col. 3

Col. 2

* Instrument channels required during power operation to monitor postaccident conditions.

** Functional tests will be conducted before startup at the end of each refueling outage or after maintenance is performed on a particular safety or relief valve.

*** Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr; and a one-point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

Deleted

Note (6)

RELOCATED TO ODCM per GL 89-01

ODCM TABLE 12.2-2

QUAD-CITIES
DPR-29

TABLE 4.2-3

RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Instrument Check [1]	Calibration [1][3]	Functional Test [1][2]	Source Check [1]
Liquid Radwaste Effluent Gross Activity Monitor	D	R	Q [7]	[6]
Service Water Effluent Gross Activity Monitor	D	R	Q [7]	R
Liquid Radwaste Effluent Flow Rate Monitor	[4]	R	NA	NA

Notes

FOR INFORMATION ONLY

[1] D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months
S = once per 6 months

[2] The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable.

a. Instrument indicates levels above the alarm setpoint.
b. Circuit failure.
c. Instrument indicates a downscale failure.
d. Instrument controls not set in OPERATE mode.

[3] Calibration shall include performance of a functional test.

[4] Instrument Check to verify flow during periods of release.

[5] Calibration shall include performance of a source check.

[6] Source check shall consist of observing instrument response during a discharge.

[7] Functional test may be performed by using trip check and test circuitry associated with the monitor chassis.

RELOCATED TO ODCM per GL 89-01

ODCM TABLE 12.2-4

QUAD-CITIES
DPR-29

TABLE 4.2-4

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Mode[2]	Instrument Check[1]	Calibration[1][4]	Functional Test[1][3]	Source Check[1]
Main Chimney Noble Gas Activity Monitor	B	D	R	Q	M
Main Chimney Sampler Flow Rate Monitor	B	D	R	Q[6]	NA
Reactor Bldg. Vent Sampler Flow Rate Monitor	B	D	R	Q[6]	NA
Main Chimney Flow Rate Monitor	B	D	R	Q	NA
Reactor Bldg Vent Activity Monitor	B	D	R	Q	Q
SJAE Activity Monitor	A	D	R	Q	R
Main Chimney Iodine and Particulate Sampler	B	D[5]	NA	NA	NA
Reactor Bldg. Vent Iodine and Particulate Sampler	B	D[5]	NA	NA	NA
Main Chimney High Range Noble Gas Monitor	B	D[5]	R	Q	M

Notes

[1] D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months

[2] A = during SJAE operation
B = at all times

[3] The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable:

a. Instrument indicates levels above the alarm setpoint
b. Circuit failure
c. Instrument indicates a downscale failure
d. Instrument controls not set in OPERATE mode

TABLE 4.2-4 (Cont'd)

[4] Calibration shall include performance of a functional test.

[5] Instrument check to verify operability of the instrument; that the instrument is in-place and functioning properly.

[6] Functional test shall be performed on local switches providing low flow alarm.

RELOCATED TO ODCM per GL 89-01

ODCM TABLE 12.2-4

QUAD-CITIES
DPR-29

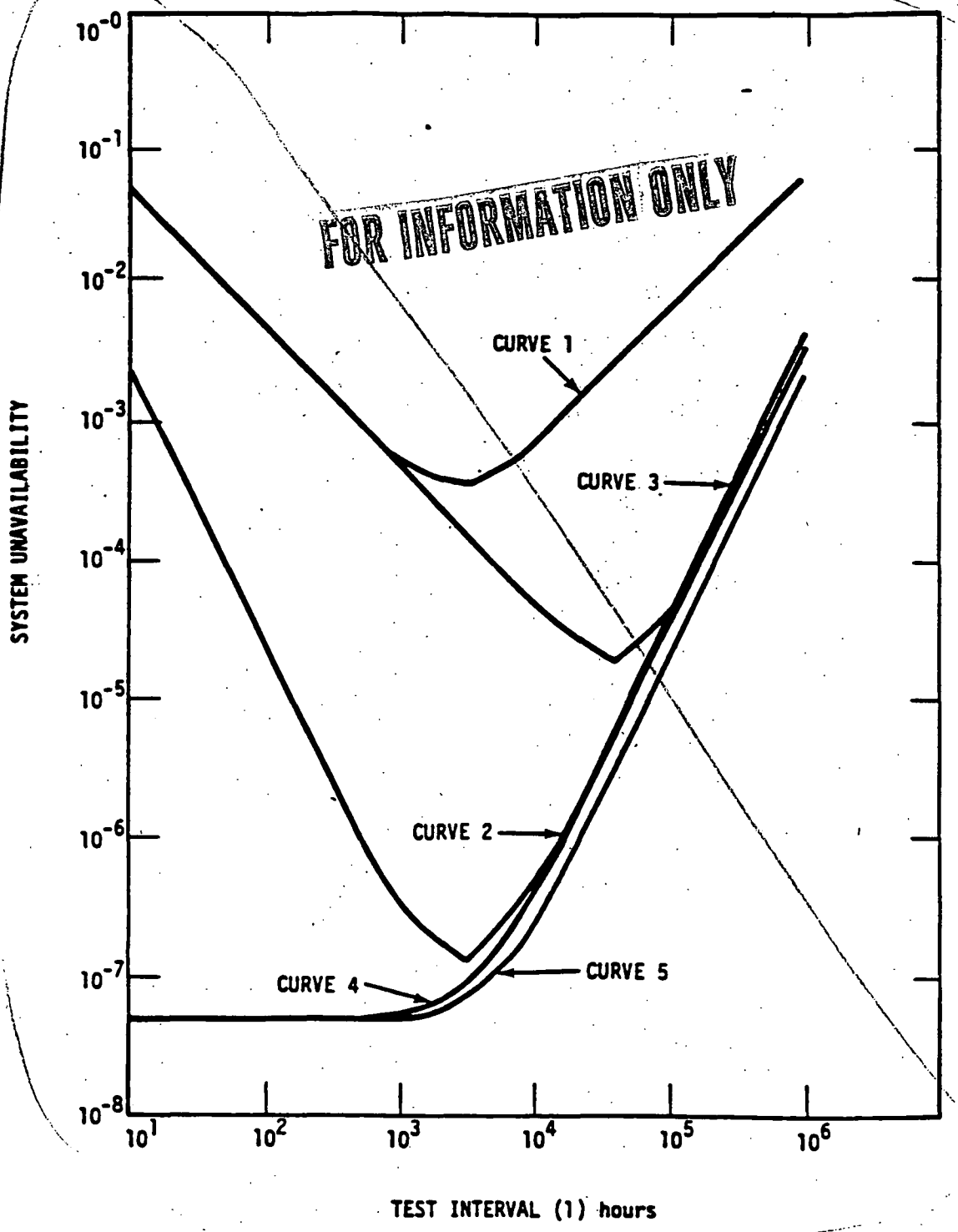

FIGURE 4.2-1

TEST INTERVAL VS. SYSTEM UNAVAILABILITY
Amendment No. 114

INSTRUMENTATION

3/4.3.2 ISOLATION ACTUATION INSTRUMENTATION

3.2 LIMITING CONDITION FOR OPERATION

A. ISOLATION ACTUATION

3.3.2 The isolation actuation instrumentation channels shown in Table 3.3.2-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.2-2 and with ISOLATION SYSTEM RESPONSE TIME as shown in Table 3.3.2-3.

APPLICABILITY: As shown in Table 3.3.2-1

ACTION:

1. a. With an isolation actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.2-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

2. b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per trip system requirement for one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition within one hour. The provisions of Specification 3.0.4 are not applicable.

3. c. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per trip system requirement for both trip systems, place at least one trip system in the tripped condition within one hour and take the ACTION required by Table 3.3.2-1.

d. An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, the inoperable channel shall be restored to OPERABLE status within 2 hours or the ACTION required by Table 3.3.2-1 for that Trip Function shall be taken.

b. ** If more channels are inoperable in one trip system than in the other, place the trip system with more inoperable channels in the tripped condition except when this would cause the Trip Function to occur. Place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TRIP SYSTEMS

Select

All caps

3.2.A-1

Trip Setpoint

a. An inoperable CHANNEL need not be placed in the tripped condition where this would cause the trip function to occur. In these cases, the inoperable CHANNEL shall be restored to OPERABLE status within one hour or the ACTION required by Table 3.2.A-1 for that trip function shall be taken.

FOR INFORMATION ONLY

4.2 SURVEILLANCE REQUIREMENTS

A. ISOLATION ACTUATION

1. 4.3.2.1 Each isolation actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table ~~4.3.2.1-1~~ 4.2.A-1.

2. 4.3.2.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.2.3 The ISOLATION SYSTEM RESPONSE TIME of each isolation trip function shown in Table 3.3.2-3 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months, where N is the total number of redundant channels in a specific isolation trip system.

FOR INFORMATION ONLY

Relocated from STS TABLE 3.3.2-2 columns 2 and 3

Trip setpoint (i) Dresden (ii) Quad Cities

3.2.A-1

FOR INFORMATION ONLY

TABLE 3.3.2-1

ISOLATION ACTUATION INSTRUMENTATION

GE-STS (BWR/4)

FUNCTIONAL UNIT / TRIP FUNCTION	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION (MODE(S))	ACTION
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level				
1) Low, Level 3	(b)	2	1, 2, 3	20
2) Low Low, Level 2	(b)	2	1, 2, 3	20
b. Drywell Pressure - High	(b)	2	1, 2, 3	20
c. Drywell and/or Suppression Chamber Radiation - High		2	1, 2, 3	23
d. Manual Initiation		(2)/(group)	1, 2, 3	(24)
		(1)/(group)	1, 2, 3	(25)
		(1)/(valve)	1, 2, 3	(25)
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level Low Low, Level 2	(c)	2	1, 2, 3 and *	26
b. Drywall Pressure - High	(c)	2	1, 2, 3	26
c. Refuel Floor High Exhaust Duct Radiation - High	(c)	2	1, 2, 3 and *	26
d. Railroad Access Shaft Exhaust Duct Radiation - High	(c)	2	1, 2, 3 and *	26
e. Refuel Floor Wall Exhaust Duct Radiation - High	(c)	2	1, 2, 3 and *	26
f. Unit 2 SGTS Actuation	(c)	(1)	1, 2, 3 and *	26
g. Manual Initiation	(c)	(2)	1, 2, 3 and *	26
h.				

(d)

(c)

(c, d)

Reactor Building Ventilation Exhaust Radiation - High (c)

d. Refueling Floor Radiation - High (c)

FOR INFORMATION ONLY

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located from STS TABLE 3.3.2-2 columns 2 and 3

TRIP SETPOINT (i) Dresden (j) QUAD CITIES

3.2.A-1

FOR INFORMATION ONLY

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

GE-STS (BWR/4)

FUNCTIONAL UNIT / TRIP FUNCTION	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL MODE(S) CONDITION	ACTION
3. MAIN STEAM LINE ISOLATION				
a. Reactor Vessel Water Level - Low Low, Level 2		2	1, 2, 3	21
b. Main Steam Line Radiation - High	(d)	2 (e)	1, 2, 3	21
c. Main Steam Line Pressure - Low		2 (e)	1	22
d. Main Steam Line Flow - High		2/line (e)	1, 2, 3	26 21
e. Condenser Vacuum - Low		2	1, 2XX, 3XX	21
f. Main Steam Line Tunnel Temperature - High		2/line (e)	1, 2, 3 (k) QC 4 Dresden	21
g. Main Steam Line Tunnel Δ Temperature - High		2 (e)	1, 2, 3	21
h. Manual Initiation		(1)/(group) (1)/(valve)	1, 2, 3 1, 2, 3	(25) (25)
i.				
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. RWCS ΔT Low - High		1	1, 2, 3	23
b. RWCS Area Temperature - High		3	1, 2, 3	23
c. RWCS Area Ventilation Δ Temp - High		3	1, 2, 3	23
d. SLCS Initiation (f)	(f)	NA	1, 2, 3,	23
e. Reactor Vessel Water Level - Low Low, Level 2		2	1, 2, 3	23
f. RWCS Δ Pressure - High		(1)	1, 2, 3	28
g. Manual Initiation		(1)	1, 2, 3	(25)
h.				

FOR INFORMATION ONLY

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MSL Tunnel

MSL

(K) QUAD CITIES only

a. Standby Liquid Control System

Relocated from STS Table 3.3.2-2, columns 2 and 3

ISOLATION CONDENSER ISOLATION

DRESDEN ONLY

3.2.A-1

FOR INFORMATION ONLY

GE-STS (BWR/4)

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT / TRIP FUNCTION	TRIP SETPOINT (i)	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION	ACTION
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION					
a. RCIC Steam Line Δ Pressure (Flow) - High			(1)	1, 2, 3	23
b. RCIC Steam Supply Pressure - Low			(1)	1, 2, 3	23
c. RCIC Turbine Exhaust Diaphragm Pressure - High			2	1, 2, 3	23
d. RCIC Equipment Room Temperature - High			(1)	1, 2, 3	23
e. RCIC Equipment Room Δ Temperature - High			(1)	1, 2, 3	23
f. RCIC Pipe Routing Area Temperature - High			(1)	1, 2, 3	23
g. RCIC Pipe Routing Area Δ Temperature - High			(1)	1, 2, 3	23
h. RCIC Emergency Area Cooler Temperature - High			(1)	1, 2, 3	23
i. Manual Initiation		((h))	(1)/(valve)	1, 2, 3	(25)
j. _____			_____	_____	___

RETURN FLOW - HIGH

FOR INFORMATION ONLY

3.3-13b

FOR INFORMATION ONLY

Relocated from STS TABLE 3.3.2-2 Columns 2 and 3

QUAD CITIES ONLY

3.2.A-1

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT / TRIP FUNCTION	TRIP SETPOINT (j)	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL MODE (s) CONDITION	ACTION
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION					
a. RCIC Steam Line Δ Pressure -High		—	(1)	1, 2, 3	23
b. RCIC Steam Supply Pressure - Low		—	2	1, 2, 3	23
c. RCIC Turbine Exhaust Diaphragm Pressure - High		—	2	1, 2, 3	23
d. RCIC Equipment Room Temperature - High		—	(1)	1, 2, 3	23
e. RCIC Equipment Room Δ Temperature - High		—	(1)	1, 2, 3	23
f. RCIC Pipe Routing Area Temperature - High		—	(1)	1, 2, 3	23
g. RCIC Pipe Routing Area Δ Temperature - High		—	(1)	1, 2, 3	23
h. RCIC Emergency Area Cooler Temperature - High		—	(1)	1, 2, 3	23
i. Manual Initiation		— ((h))	(1)/(valve)	1, 2, 3	(25)
j. _____		—	_____	_____	___

Reactor Vessel Pressure

FLOW

AREA

FOR INFORMATION ONLY

Relocated from STS Table 3.3.2-2 columns 2 and 3

Trip Setpoint (i) Dresden (j) Quad Cities

3.2.A-1

FOR INFORMATION ONLY

GE-STS (BWR/4)

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT / TRIP FUNCTION	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION	ACTION
6. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION				
a. HPCI Steam Line Δ Pressure - High (Flow)		(1)	1, 2, 3	23
b. HPCI Steam Supply Pressure-Low (Reactor vessel)		2	1, 2, 3	23
c. HPCI Turbine Exhaust Diaphragm Pressure - High		2	1, 2, 3	23
d. HPCI Equipment Room (Area) Temperature - High		(1) (8 - Dresden 2 Quad)	1, 2, 3	23
e. HPCI Equipment Room Δ Temperature - High		(1)	1, 2, 3	23
f. HPCI Emergency Area Cooler Temperature - High		(1)	1, 2, 3	23
g. HPCI Pipe Routing Area Temperature - High		(1)	1, 2, 3	23
h. HPCI Pipe Routine Area Δ Temperature - High		(1)	1, 2, 3	23
i. Manual Initiation		(1)/(group)	1, 2, 3	(25)
j. _____		_____	_____	___

FOR INFORMATION ONLY

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DRESDEN

Relocated from STS Table 3.3.2-2 columns 2 and 3

Trip Setpoint (i)

3.2.A-1

FOR INFORMATION ONLY

GE-STS (BWR/4)

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

Functional Unit

TRIP FUNCTION	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION	ACTION
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION			3, 4, 5	
a. Reactor Vessel Water Level - Low, Level 3		2	1, 2, 3	27 23
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High		2(e)	1, 2, 3	27
c. RHR Equipment Area Δ Temperature - High	(d)	(1)	1, 2, 3	27
d. RHR Area Cooler Temperature - High		(1)	1, 2, 3	27
e. RHR Flow - High		(1)	1, 2, 3	27
f. Manual Initiation		(1)/(group)	1, 2, 3	(25)
g. _____		_____	_____	___

Recirculation Line Water Temperature - High

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RHR SYSTEM CONTAINMENT

FOR INFORMATION ONLY

Quad Cities

Trip Setpoint (d)

Relocated from STS TABLE 3.3.2-2, columns 2 and 3

3.2.A-1

FOR INFORMATION ONLY

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT / TRIP FUNCTION	VALVE ACTUATION GROUPS OPERATED BY SIGNAL	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	APPLICABLE OPERATIONAL CONDITION (Mode(s))	ACTION
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION			3, 4, 5	
a. Reactor Vessel Water Level - Low, Level 3		2 (g)	1, 2, 3	27 / 23
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High		(1) 2	1, 2, 3	8
c. RHR Equipment Area Δ Temperature - High		(1)	1, 2, 3	27
d. RHR Area Cooler Temperature - High		(1)	1, 2, 3	27
e. RHR Flow - High	(d)	(1)	1, 2, 3	27
f. Manual Initiation		(1)/(group)	1, 2, 3	(25)
g. _____		_____	_____	___

RHR SYSTEM CONTAINMENT

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FOR INFORMATION ONLY

INTENTIONALLY BLANK

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TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

ACTION

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 21 - Be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within ~~12 hours~~ and in COLD SHUTDOWN within the next 24 hours.

ACTION 22 - Be in at least STARTUP within 6 hours.

ACTION 23 - Close the affected system isolation valves within one hour and declare the affected system inoperable.

ACTION 24 - Restore the manual initiation function to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

ACTION 25 - Restore the manual initiation function to OPERABLE status within 8 hours or (close the affected system isolation valves within the next hour and declare the affected system inoperable.) (be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours).

ACTION 26 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within one hour.

ACTION 27 - Lock the affected system isolation valves closed within one hour and declare the affected system inoperable.

NOTES - TABLE NOTATION

* When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS ~~and~~ or operations with a potential for draining the reactor vessel.

** ~~May be bypassed with reactor steam pressure < 1043 psig and all turbine stop valves closed~~

(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one other OPERABLE channel in the same trip system is monitoring that parameter.

(b) Also trips and isolates the mechanical vacuum pumps and steam jet air ejector~~s~~.

(c) ~~Also starts~~ the standby gas treatment system.

(d) ~~Actuates valves F11 F008 and F11 F009 only.~~

(e) ~~A channel is OPERABLE if 2 of 4 detectors in that channel are OPERABLE.~~

(f) Closes only RWCU system isolation valve(s).

((g) Requires RCIC system steam supply pressure-low coincident with drywell pressure-high.)

((h) Manual initiation isolates ___ only and only with a coincident reactor vessel water level-low, level 3.0.

ALL CAPs

Only one Trip system

Isolates the Reactor Building ventilation system and actuates

INSERT - QUAD CITIES - DRESDEN

the Functional Unit maintains isolation actuation capability.

This function not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

INSERT - DRESDEN
TSUP TABLE 3.2.A-1

(g) Normal background is as measured during full power operation without hydrogen being injected. With Unit 2 operating above 20% RATED THERMAL POWER and hydrogen being injected into the feedwater, this Unit 2 setting may be as measured during full power operation with hydrogen being injected.

(h) Includes a time delay of $3 \leq t \leq 9$ seconds.

(i) Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

INSERT - QUAD CITIES

TSUP TABLE 3.2.A-1

(g) Only one trip system required in OPERATIONAL MODE(s) 4 and 5 with RHR Shutdown Cooling System integrity maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system.

(h) Normal background is as measured during full power operation without hydrogen being injected.

(i) Includes a time delay of $3 \leq t \leq 9$ seconds.

(j) Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

(k) Also isolates the control room ventilation system.

FOR INFORMATION ONLY

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

Relocated TO TABLE 3.2.A-1 Column 2

TRIP FUNCTION	TRIP SETPOINT (i) Dresden (j) Quad Cities	ALLOWABLE VALUE
1. PRIMARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level		
1) Low, Level 3	≥ (13.0) inches*	144 ≥ (11.5) inches
2) Low Low, Level 2	≥ -(38) inches*	2 (Dresden) 2.5 (Quad Cities) ≥ -(45) inches
b. Drywell Pressure - High	≤ ( ) psig	≤ ( ) psig
c. Drywell and/or Suppression Chamber Radiation - High	≤ ( )mR/hr**	≤ mR/hr** NA 100 R/hr
d. Manual Initiation	NA	
e. _____	—	
2. SECONDARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level - Low, Level 3	≥ (13.0) inches*	144 ≥ (11.5) inches
b. Drywell Pressure - High	≤ ( ) inches	≤ inches psig
c. Refuel Floor High Exhaust Duct Radiation - High	≤ ___ mR/hr.	3 (Quad Cities) 4 (Dresden) ≤ ___ mR/hr.
d. Railroad Access Shaft Exhaust Duct Radiation - High	≤ ___ mR/hr.	100 ≤ ___ mR/hr.
e. Refuel Floor Wall Exhaust Duct Radiation - High	≤ ( )mR/hr.	≤ ( )mR/hr.
f. Unit 2 SGTS Actuation	NA	NA
g. Manual Initiation	NA	NA
h. _____	—	—
3. MAIN STEAM LINE ISOLATION		
a. Reactor Vessel Water Level - Low Low, Level 2	≥ -(38) inches*	84 ≥ -(45) inches
b. Main Steam Line Radiation - High	≤ (3.0) X full power background	≤ (3.6) X full power background (normal)
c. Main Steam Line Pressure - Low	≥ (855) psig	825 ≥ 835 psig
d. Main Steam Line Flow - High	≤ (110) psid	≤ (115) psid

15 (h) (Quad Cities) 3 (g) (Dresden)

≤ 140% of rated (Quad Cities)

≤ 120% of rated (Dresden)

FOR INFORMATION ONLY

DRESDEN

FOR INFORMATION ONLY

Relocated TO TABLE 3.2.A-1 column 2

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT(i)	ALLOWABLE VALUE
MAIN STEAM LINE ISOLATION (Continued)		
e. Condenser Vacuum - Low	≥ (9.0) inches Hg (absolute pressure) (vacuum)	≥ (8.8) inches Hg (absolute pressure) (vacuum)
f. Main Steam Line Tunnel Temperature - High	≤ (177)°F	≤ (184)°F 200 °F
g. Main Steam Line Tunnel Δ Temperature - High	≤ (99)°F	≤ (108)°F
h. Manual Initiation	NA	NA
i. _____	—	—
4. REACTOR WATER CLEANUP SYSTEM ISOLATION		
a. RWCS Δ Flow - High	≤ (60) gpm	≤ (80) gpm
b. RWCS Area Temperature - High	≤ (147)°F or (118.3)°F#	≤ (154)°F or (125.3)°F#
c. RWCS/Area Ventilation Δ Temperature - High	≤ (69)°F or (35.3)°F#	≤ (78)°F or (44.3)°F#
d. SLCS Initiation	NA	NA
e. Reactor Vessel Water Level - Low Low, Level 2	≥ -(38) inches*	≥ -(45) (144) inches
f. RWCS Δ Pressure - High	≤ ( )psid	≤ ( ) psid
g. Manual Initiation	NA	NA
h. _____	—	—
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION		
a. RCIC Steam Line Δ Pressure - High	≤ (185)" H_2O	300% of rated steam flow ≤ (191)" H_2O
b. RCIC Steam Supply Pressure - Low	≥ (60) psig	≥ (53) psig
c. RCIC Turbine Exhaust Diaphragm Pressure - High	≤ (10.0) psig	≤ (20.0) psig

≤ 32 (UNIT 2)/ ≤ 14.8 (UNIT 3) inches water diff.

FOR INFORMATION ONLY

GE-STS (BWR/4)

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FOR INFORMATION ONLY

Relocated to TABLE 3.2.A-1 column 2

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT(1)	ALLOWABLE VALUE
MAIN STEAM LINE ISOLATION (Continued)		
e. Condenser Vacuum - Low	≥ (9.0) inches Hg (absolute pressure) (vacuum)	≥ (8.8) inches Hg (absolute pressure) (vacuum)
f. Main Steam Line Tunnel Temperature - High	≤ (177)°F	≤ (184)°F → 200 °F
g. Main Steam Line Tunnel Δ Temperature - High	≤ (99)°F	≤ (108)°F
h. Manual Initiation	NA	NA
i. _____	—	—
4. **REACTOR WATER CLEANUP SYSTEM ISOLATION**		
a. RWCS Δ Flow - High	≤ (60) gpm	≤ (80) gpm
b. RWCS Area Temperature - High	≤ (147)°F or (118.3)°F#	≤ (154)°F or (125.3)°F#
c. RWCS/Area Ventilation Δ Temperature - High	≤ (69)°F or (35.3)°F#	≤ (78)°F or (44.3)°F#
d. SLCS Initiation	NA	NA
e. Reactor Vessel Water Level - Low Low, Level 2	≥ -(38) inches*	144 → ≥ (45) inches
f. RWCS Δ Pressure - High	≤ ( )psid	≤ ( ) psid
g. Manual Initiation	NA	NA
h. _____	—	—
5. **REACTOR CORE ISOLATION COOLING SYSTEM-ISOLATION**		
a. RCIC Steam Line Δ Pressure - High	≤ (185)" H_2O	300% of rated steam flow(1) → ≤ (191)" H_2O
b. RCIC Steam Supply Pressure - Low	≥ (60) psig	≥ (53) psig → 100
c. RCIC Turbine Exhaust Diaphragm Pressure - High	≤ (10.0) psig	≤ (20.0) psig

FOR INFORMATION ONLY

FOR INFORMATION ONLY

Relocated to TABLE 3.2.A-1, column 2

TABLE 3.3.2-2 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT (i) Dresden (j) Quad Cities	ALLOWABLE VALUE
REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION Continued)		
d. RCIC Equipment Room Temperature - High	≥ ( )°F ≤ (167)°F	≤ 170°F (Quad Cities only) ≥ ( )°F ≤ (174)°F
e. RCIC Equipment Room Δ Temperature - High	≤ (89)°F	≤ (98)°F
f. RCIC Pipe Routing Area Temperature - High	≤ (167)°F##	≤ (174)°F##
g. RCIC Pipe Routing Area Δ Temperature - High	≤ (89)°F##	≤ (98)°F##
h. RCIC Emergency Area Cooler Temperature - High	≤ (147)°F	≤ (154)°F
i. Manual Initiation	NA	NA
j. _____	—	—
6. **HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION**		
a. HPCI Steam Line Flow - High	≤ (289) inches H_2O	≤ (303) inches H_2O
b. HPCI Steam Supply Pressure - Low	≥ (110) psig	≥ (100) psig
c. HPCI Turbine Exhaust Diaphragm Pressure - High	≤ (10) psig	≤ (20) psig
d. HPCI Equipment Room Temperature - High	≤ (167)°F	≤ (174)°F
e. HPCI Equipment Room Δ Temperature - High	≤ (89)°F	≤ (98)°F
f. HPCI Emergency Area Cooler Temperature - High	≤ (147)°F	≤ (154)°F
g. HPCI Pipe Routing Area Temperature - High	≤ (167)°F##	≤ (174)°F##
h. HPCI Pipe Routing Area Δ Temperature - High	≤ (89)°F##	≤ (98)°F##
i. Manual Initiation	NA	NA
j. _____	—	—

300% of rated steam flow(i) (Quad Cities)
300% of rated steam flow(h) (Dresden)

100 psig (Quad Cities)
80 psig (Dresden)

170 (Quad Cities)
200 (Dresden)

FOR INFORMATION ONLY

FOR INFORMATION ONLY

Relocated TO Table 3.2.A-1, column 2

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT (1) Dresden (2) Quad Cities	ALLOWABLE VALUE
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION		
a. Reactor Vessel Water Level - Low, Level 3	≥ (13.0) inches*	≥ (11.5) inches (144)
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	≤ (109) psig	≤ (119) psig (135 (Quad Cities))
c. RHR Equipment Area Δ Temperature - High	≤ (89)°F**	≤ (90.5)°F** (≤ 350°F (Dresden))
d. RHR Area Cooler Temperature - High	≤ (167)°F**	≤ (170.5)°F**
e. RHR Flow - High	( )	( )
f. Manual Initiation	NA	NA
g. _____	—	—

*See Bases Figure B 3/4 3-1.

~~**Initial setpoint. Final setpoint to be determined during startup test program. Any required change to this setpoint shall be submitted to the Commission within 90 days of test completion.~~

#Lower setpoints for TSH-G3S-N600 E, F and TSH-G33-N602 E, F.

##15 minute time delay.

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~~FOR INFORMATION ONLY~~

TABLE 3.3.2-3

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION	RESPONSE TIME (Seconds)#
1. PRIMARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level	
1) Low, Level 3	$\leq$(13)(a)
2) Low Low, Level 2	$\leq$(1.0)*/$\leq$(13)(a)**
b. Drywell Pressure - High	$\leq$(13)(a)
(c. Drywell and/or Suppression Chamber Radiation - High	NA)
d. Manual Initiation	NA
e. _____	—
2. SECONDARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level-Low, Level 3	$\leq$(13)(a)
b. Drywell Pressure - High	$\leq$(13)(a)
c. Refuel Floor High Exhaust Duct Radiation - High(b)	$\leq$(13)(a)
d. Railroad Access Shaft Exhaust Duct Radiation - High(b)	$\leq$(13)(a)
e. Refuel Floor Wall Exhaust Duct Radiation -High(b)	$\leq$(13)(a)
f. Unit 2 SGTS Actuation	NA
g. Manual Initiation	NA
h. _____	—
3. MAIN STEAM LINE ISOLATION	
a. Reactor Vessel Water Level- Low Low, Level 2	$\leq$(13)(a)
b. Main Steam Line Radiation - High(a)(b)	$\leq$(1.0)*/$\leq$(13)(a)**
c. Main Steam Line Pressure - Low	$\leq$(1.0)*/$\leq$(13)(a)**
d. Main Steam Line Flow-High	$\leq$(0.5)*/$\leq$(13)(a)**
e. Condenser Vacuum - Low	(NA)
f. Main Steam Line Tunnel Temperature - High	(NA)
g. Main Steam Line Tunnel Δ Temperature - High	(NA)
h. Manual Initiation	NA
j. _____	—
4. REACTOR WATER CLEANUP SYSTEM ISOLATION	
a. RWCS Δ Flow - High	$\leq$(13)(a)(##)
b. RWCS Area Temperature - High	(NA)
c. RWCS Area Ventilation Temperature ΔT - High	(NA)
d. SLCS Initiation	NA
e. Reactor Vessel Water Level - Low Low, Level 2	$\leq$(13)(a)
f. RWCS Δ Pressure - High	(NA)
g. Manual Initiation	NA
h. _____	—
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION	
a. RCIC Steam Line Δ Pressure - High	$\leq$(13)(a)(###)
b. RCIC Steam Supply Pressure - Low	$\leq$(13)(a)
c. RCIC Turbine Exhaust Diaphragm Pressure - High	(NA)

Relocated to TABLE B.A-1 FOOTNOTE (h) Dresden (i) QUAD CITIES

Deleted

FOR INFORMATION ONLY

TABLE 3.3.2-3 (Continued)
ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION		RESPONSE TIME (Seconds)#
REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION		
d.	RCIC Equipment Room Temperature - High	(NA)
e.	RCIC Equipment Room Δ Temperature - High	(NA)
f.	RCIC Pipe Routing Area Temperature - High	(NA)
g.	RCIC Pipe Routing Area Δ Temperature - High	(NA)
h.	RCIC Emergency Area Cooler Temperature - High	(NA)
i.	Manual Initiation	NA
j.	_____	—
6. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION		
a.	HPCI Steam Flow - High	≤(13)(a)(####)
b.	HPCI Steam Supply Pressure - Low	≤(13)(a)
c.	HPCI Turbine Exhaust Diaphragm Pressure - High	(NA)
d.	HPCI Equipment Room Temperature - High	(NA)
e.	HPCI Equipment Room Δ Temperature - High	(NA)
f.	HPCI Emergency Area Cooler Temperature - High	(NA)
g.	HPCI Pipe Routing Area Temperature - High	(NA)
h.	HPCI Pipe Routing Area Δ Temperature - High	(NA)
i.	Manual Initiation	NA
j.	_____	—
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION		
a.	Reactor Vessel Water Level - Low, Level 3	≤(13)(a)
b.	Reactor Vessel (RHR Cut-in Permissive) Pressure - High	(NA)
c.	RHR Equipment Area Δ Temperature - High	(NA)
d.	RHR Area Cooler Temperature - High	(NA)
e.	RHR Flow - High	(NA)
f.	Manual Initiation	NA
g.	_____	—

(a) Isolation system instrumentation response time specified includes diesel generator starting and sequence loading delays.

(b) Radiation detectors are exempt from response time testing. Response time shall be measured from detector output or the input of the first electronic component in the channel.

*Isolation system instrumentation response time for MSIVs only. No diesel generator delays assumed for (_____) valves.

**Isolation system instrumentation response time for associated valves except MSIVs.

#Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time shown in Table 3.6.3-1 and 3.6.5.2-1 for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

(##With time delay of (45) seconds.)

(###With time delay of 13 + 0, -1) seconds.)

(####With time delay of ( ) seconds.)

Reactor Building Ventilation Exhaust Radiation - High (c)

Refueling Floor Radiation - High (c)

FOR INFORMATION ONLY

DRESDEN

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TABLE 4.3.2.1-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Applicable OPERATIONAL MODE (s)

FUNCTIONAL UNIT / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level -				
1) Low, Level 3	S	M	R E(a)	1, 2, 3
2) Low Low, Level 2 (b)	S	M	R	1, 2, 3
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. Drywell and/or Suppression Chamber Radiation - High	S	M	R E	1, 2, 3
d. Manual Initiation	NA	~~(M(a), (R)~~	NA	1, 2, 3
e.				
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level Low, Level 3 (c)	S	M	R E(a)	1, 2, 3 and *
b. Drywell Pressure - High (b,c)	NA	M	Q	1, 2, 3
c. Refuel Floor High Exhaust Duct Radiation - High	S	M	R E	1, 2, 3 and *
d. Railroad Access Shaft Exhaust Duct Radiation - High	S	M	R	1, 2, 3 and *
e. Refuel Floor Wall Exhaust Duct Radiation - High	S	M	R E	1, 2, 3 and *
f. Unit 2 SGTS Actuation	NA	M	Q	1, 2, 3 and *
g. Manual Initiation	NA	~~(M(a), (R)~~	NA	1, 2, 3 and *
h.				
3. MAIN STEAM LINE ISOLATION				
a. Reactor Vessel Water Level - Low Low, Level 2 (MSL)	S	M	R E(a)	1, 2, 3
b. Main Steam Line Radiation - High (MSL TUNNEL)	S	M	R E	1, 2, 3
c. Main Steam Line Pressure - Low (MSL)	NA	M	Q	1
d. Main Steam Line Flow - High	S	M	R E	1, 2, 3

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QUAD CITIES

Reactor Building Ventilation Exhaust Radiation - High (c, d)

Refueling Floor Radiation - High (c, d)

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TABLE 4.3.2.1-1

FOR INFORMATION ONLY

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	APPLICABLE OPERATIONAL MODE(S) / OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level -			E(a)	
1) Low, Level 3	S	M	R	1, 2, 3
2) Low Low, Level 2 (b)	S	M	R	1, 2, 3
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. Drywell and/or Suppression Chamber Radiation - High	S	M	R E	1, 2, 3
d. Manual Initiation	NA	M(a) (R)	NA	1, 2, 3
e.				
2. SECONDARY CONTAINMENT ISOLATION (c, d)				
a. Reactor Vessel Water Level Low, Level 3	S	M	R E(a)	1, 2, 3 and *
b. Drywell Pressure - High (b, c, d)	NA	M	Q	1, 2, 3
c. Refuel Floor High Exhaust Duct Radiation - High	S	M	R E	1, 2, 3 and *
d. Railroad Access Shaft Exhaust Duct Radiation - High	S	M	R	1, 2, 3 and *
e. Refuel Floor Wall Exhaust Duct Radiation - High	S	M	R E	1, 2, 3 and *
f. Unit 2 SGTS Actuation	NA	M	Q	1, 2, 3 and *
g. Manual Initiation	NA	M(a) (R)	NA	1, 2, 3 and *
h.				
(MSL) 3. MAIN STEAM LINE ISOLATION				
a. Reactor Vessel Water Level - Low Low, Level 2	S	M	R E(a)	1, 2, 3
MSL TUNNEL b. Main Steam Line Radiation - High	S	M	R E	1, 2, 3
MSL c. Main Steam Line Pressure - Low	NA	FOR INFORMATION ONLY		1
d. Main Steam Line Flow - High (d)	S	M	R	1, 2, 3

GE-STS (BWR/4)

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a. Standby Liquid Control System

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FOR INFORMATION ONLY

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
MAIN STEAM LINE ISOLATION (Continued)				
e. Condenser Vacuum - Low	NA	M	Q	1, 2**, 3**
f. Main Steam Line Tunnel Temperature - High	NA	M	Q	1, 2, 3
g. Main Steam Line Tunnel Δ Temperature - High	NA	M	Q	1, 2, 3
h. Manual Initiation	NA	M(a), R	NA	1, 2, 3
i.				
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. RWCS Δ Flow - High	S	M	R	1, 2, 3
b. RWCS Area Temperature - High	NA	M	Q	1, 2, 3
c. RWCS Area Ventilation Δ Temperature - High	NA	M	Q	1, 2, 3
d. SLC Initiation	NA	M, R	NA	1, 2, 3
e. Reactor Vessel Water Level - Low Low, Level 2	S	M	R	1, 2, 3
f. RWCS Δ Pressure - High	S	M	R	1, 2, 3
g. Manual Initiation	NA	M(a), R	NA	1, 2, 3
h.				
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION				
a. RCIC Steam Line Δ Pressure - High	NA	M	Q	1, 2, 3
b. RCIC Steam Supply Pressure - Low	NA	M	Q	1, 2, 3
c. RCIC Turbine Exhaust Diaphragm Pressure - High	NA	M	Q	1, 2, 3

GE-STS (BWR/4)

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Functional Unit

Applicable OPERATIONAL MODE(s)

MSL

Isolation Condenser

Condensate Flow - High

Flow

a. Standby Liquid Control System

QUAD CITIES

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TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Applicable OPERATIONAL MODE(S)

Functional Unit / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
MAIN STEAM LINE ISOLATION (Continued)				
e. Condenser Vacuum - Low	NA	M	Q	1, 2**, 3**
f. Main Steam Line Tunnel Temperature - High (MSL)	NA	M E	Q	1, 2, 3
g. Main Steam Line Tunnel Δ Temperature - High	NA	M	Q	1, 2, 3
h. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3
i. _____	—	_____	—	_____
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. RWCS Δ Flow - High	S	M	R	1, 2, 3
b. RWCS Area Temperature - High	NA	M	Q	1, 2, 3
c. RWCS Area Ventilation Δ Temperature - High	NA	M	Q	1, 2, 3
d. (a) SLCS Initiation	NA	(M (D)) (R) E	NA	1, 2, 3
e. (b) Reactor Vessel Water Level - Low Low, Level 2	S	M	R E(a)	1, 2, 3
f. RWCS Δ Pressure - High	S	M	R	1, 2, 3
g. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3
h. _____	—	_____	—	_____
5. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION				
a. RCIC Steam Line Δ Pressure - High (Flow)	NA	M	FOR INFORMATION ONLY	1, 2, 3
b. RCIC Steam Supply Pressure - Low (Reactor Vessel)	NA	M	Q	1, 2, 3
c. RCIC Turbine Exhaust Diaphragm Pressure - High (Area Temperature - High)	NA	M E	Q E	1, 2, 3

GE-STS (BWR/4)

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FOR INFORMATION ONLY

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED (Applicable OPERATIONAL MODE(s))
REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION (Continued)				
d. RCIC Equipment Room Temperature - High	NA	M	Q	1, 2, 3
e. RCIC Equipment Room Δ Temperature - High	NA	M	Q	1, 2, 3
f. RCIC Pipe Routing Area Temperature - High	NA	M	Q	1, 2, 3
g. RCIC Pipe Routing Area Δ Temperature - High	NA	M	Q	1, 2, 3
h. RCIC Emergency Area Cooler Temperature - High	NA	M	Q	1, 2, 3
i. Manual Initiation	NA	~~M(a) R~~	NA	1, 2, 3
j.				
6. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION				
a. ~~HPCI Steam Line Pressure~~ Flow - High	NA	FOR INFORMATION ONLY	Q (a)	1, 2, 3
b. ~~HPCI Steam Supply~~ Pressure - Low	NA	M	Q	1, 2, 3
c. HPCI Turbine Exhaust Diaphragm Pressure - High	NA	M	Q	1, 2, 3
d. ~~HPCI Equipment Room~~ Area Temperature - High	NA	M E	Q	1, 2, 3
e. HPCI Equipment Room Δ Temperature - High	NA	M	Q	1, 2, 3
f. HPCI Emergency Area Cooler Temperature - High	NA	M	Q	1, 2, 3
g. HPCI Pipe Routing Area Temperature - High	NA	M	Q	1, 2, 3

Reactor vessel pressure

2.A-1

GE-STS (BWR/4)

3/4 3-25b

DRESDEN ONLY

FOR INFORMATION ONLY

2.A-1

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Applicable OPERATIONAL MODE(S)

TRIP FUNCTION (Functional Unit)	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION (Continued)				
h. HPCI Pipe Routing Area Δ Temperature - High	NA	M	Q	1, 2, 3
i. Manual Initiation	NA	~~(M(a)) (R)~~	NA	1, 2, 3
j. _____	_____	_____	_____	_____
7. RHR ~~SYSTEM~~ SHUTDOWN COOLING ~~MODE~~ ISOLATION				
a. Reactor Vessel Water Level - Low, Level 3	S	M	R E(a)	1, 2, 3 → 4, 5
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	NA	M	Q	1, 2, 3
c. RHR Equipment Area Δ Temperature - High	NA	M	Q	1, 2, 3
d. RHR Area Cooler Temperature - High	NA	M	Q	1, 2, 3
e. RHR Flow - High	S	M	R	1, 2, 3
f. Manual Initiation	NA	~~(M(a)) (R)~~	NA	1, 2, 3
g. _____	_____	_____	_____	_____

Recirculation Line WATER Temperature - High

FOR INFORMATION ONLY

or

~~* When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.~~

~~** When reactor steam pressure > (1043) psig and/or any turbine stop valve is open.~~

~~(a) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days as part of circuitry required to be tested for automatic system isolation.~~

~~(b) Each train or logic channel shall be tested at least every other 31 days.~~

INSERT 1-D

TRIP UNITS are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the Table.

FOR INFORMATION ONLY

QUAD CITIES ONLY

2.A-1

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Applicable OPERATIONAL MODE(S)

TRIP FUNCTION (Functional Unit)	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION (Continued)				
h. HPCI Pipe Routing Area Δ Temperature - High	NA	M	Q	1, 2, 3
i. Manual Initiation	NA	~~(M(a) and (R)~~	NA	1, 2, 3
j. _____	_____	_____	_____	_____
7. **RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION**				
a. Reactor Vessel Water Level - Low, Level 3	S	M	R E(a)	~~1, 2, 3~~ 3, 4, 5
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	NA	M	Q	1, 2, 3
c. RHR Equipment Area Δ Temperature - High	NA	M	Q	1, 2, 3
d. RHR Area Cooler Temperature - High	NA	M	Q	1, 2, 3
e. RHR Flow - High	S	M	R	1, 2, 3
f. Manual Initiation	NA	~~(M(a) and (R)~~	NA	1, 2, 3
g. _____	_____	_____	_____	_____

FOR INFORMATION ONLY

or

* When handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

** ~~When reactor steam pressure > (1043) psig and/or any turbine stop valve is open.~~

(a) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days as part of circuitry required to be tested for automatic system isolation.

~~(b) Each train or logic channel shall be tested at least every other 31 days.~~

INSERT 1 - QC

TRIP UNITS are calibrated at least once per 31 days and Transmitters are calibrated at the frequency identified in the Table.

GE-STS (BWR/4)

3/4 3-26b

TSUP TABLE 4.2.A-1

INSERT I-6

~~(a) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.~~ (a)

(b) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(c) Isolates the reactor building ventilation system and actuates the standby gas treatment system.

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INSERT 1-QC

(b) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(c) Isolates the reactor building ventilation system and actuates the standby gas treatment system.

(d) Also isolates the control room ventilation system.

DRESDEN ONLY

FOR INFORMATION ONLY

INSTRUMENTATION

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

3.2 LIMITING CONDITION FOR OPERATION

B. Emergency Core Cooling Systems (ECCS) Actuation

3.3.3 The ~~emergency core cooling system~~ (ECCS) actuation instrumentation channels shown in Table 3.~~3.3-1~~ shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column ~~of Table 3.3.3-2 and with EMERGENCY CORE COOLING SYSTEM RESPONSE TIME as shown in Table 3.3.3-3.~~ (2.B-1)

APPLICABILITY: As shown in Table 3.~~3.3-1~~ 2.B-1

ACTION:

1. a. With an ECCS actuation instrumentation channel trip setpoint less conservative than the value shown in the ~~Allowable Values~~ column of Table 3.~~3.3-2~~, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

2. b. With one or more ECCS actuation instrumentation channels inoperable, take the ACTION required by Table 3.~~3.3-1~~ 2.B-1.

4.2 SURVEILLANCE REQUIREMENTS

B. ECCS Actuation

~~4.3.3.1~~ Each ECCS actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL ~~CONDITIONS~~ MODE(S) and at the frequencies shown in Table 4.~~3.3-1~~ 2.B-1.

~~4.3.3.2~~ LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.3.3 The ECCS RESPONSE TIME of each ECCS trip function shown in Table 3.3.3-3 shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific ECCS trip system.

3. With either ADS TRIP SYSTEM inoperable, restore the inoperable TRIP SYSTEM to OPERABLE status within:
   a. 7 days provided that both the HPCI and IC are OPERABLE, or
   b. 72 hours,

   With the above provisions of this ACTION not met, be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤ 150 psig within the following 24 hours.

TRIP SETPOINT (h)

2.8-1

TABLE 3.~~3.3-1~~

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

(5)

FUNCTIONAL UNIT / TRIP FUNCTION	MINIMUM ~~OPERABLE~~ CHANNELS PER TRIP FUNCTION (a)	APPLICABLE MODE(S) OPERATIONAL CONDITIONS	ACTION
1. CORE SPRAY SYSTEM			
a. Reactor Vessel Water Level - Low Low (Low, Level 1) (b)	4 (2) ((b)) (2) ((b)) (2)	(c) 1, 2, 3, 4, 5	30
b. Drywell Pressure - High (b)(f)	2	1, 2, 3	30
c. Reactor Vessel Pressure - Low (Permissive)	2	1, 2, 3	31
d. CS Pump Discharge Flow - Low (Bypass)	1/Pump (1/Loop)	1, 2, 3, 4, 5	32
e. Manual Initiation	(1)/(subsystem)	1, 2, 3, 4*, 5*	33
f.	—	—	34
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM (LPCI) Subsystem			
a. Reactor Vessel Water Level - Low Low (Low, Level 1)	(2) (8) 4	(c) 1, 2, 3, 4, 5	30
b. Drywell Pressure - High (f)	2	1, 2, 3	30
c. Reactor Vessel Pressure - Low (Permissive)	2	1, 2, 3	31
d. LPCI Pump Discharge Flow - Low (Bypass)	1/Pump (loop)	1, 2, 3, 4, 5	32
e. Manual Initiation	(1)/(subsystem)	1, 2, 3, 4*, 5*	33
f.	—	—	34
3. HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) (d)			
a. Reactor Vessel Water Level - (Low Low Level 2)	4	1, 2, 3	35
b. Drywell Pressure - High (f)	4	1, 2, 3	35
c. Condensate Storage Tank Level - Low (i)	2 (k)	1, 2, 3	36 35
d. Suppression Pool Water Level - High (Chamber)	2	1, 2, 3	36
e. Reactor Vessel Water Level - High, ~~Level 8~~	2 (d)	1, 2, 3	31
f. HPCI Pump Discharge Flow - Low (Bypass)	1	1, 2, 3	33
g. Manual Initiation	(1)/(system)	1, 2, 3	34
h.	—	—	—

Trip

1 - Dresden
2 - Quad Cities

FOR INFORMATION ONLY

FOR INFORMATION ONLY

GE-STS (BWR/4)

TABLE 3.3.3-1 (Cont'd)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
4. AUTOMATIC DEPRESSURIZATION SYSTEM (d) — TRIP SYSTEM A			
a. Reactor Vessel Water Level - Low Low, Level 1	2	1, 2, 3	30
b. Drywell Pressure - High (F)	2	1, 2, 3	30
c. ADS Timer	1	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	1/loop pump	1, 2, 3	31
e. RHR LPCI Mode Pump Discharge Pressure - High (Permissive)	1/loop	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	(1)	1, 2, 3	31
g. Manual Initiation	(1)/(valve)	1, 2, 3	34
h.			

INSERT 2

TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE OPERATIONAL CONDITIONS	ACTION
LOSS OF POWER				
1. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	1/bus	1/bus	1, 2, 3, 4*, 5**	36
2. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	3/bus	2/bus	1, 2, 3, 4*, 5**	36

(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided ~~at least one OPERABLE channel in the same trip system is monitoring that parameter~~ the associated Functional UNIT maintains ECCS INITIATION capability.

(b) Also actuates the associated emergency diesel generators.

(c) ~~One trip system.~~ Provides signal to HPCI pump suction valves only.

(d) ~~On 2 out of 2 logic, provides a signal to (close) (trip) HPCI pump (discharge valve) (turbine) only.~~

When the system is required to be OPERABLE per Specification 3.5.2 B

Not required to be OPERABLE when reactor steam dome pressure is ~~less than or equal to~~ (100) psig. < 150

Required when ESF equipment associated Diesel Generator is required to be OPERABLE per Specification 3.9.B

d. Low Low Level Timer

INSERT 3

: a. For ADS, declare the associated ADS TRIP SYSTEM inoperable.
b. For CS, LPCI, or HPCI, declare the associated ECCS system(s) inoperable.

2.B-1

TABLE 3.3.3-1 (Continued)

ECCS

~~EMERGENCY CORE COOLING SYSTEM~~ ACTUATION INSTRUMENTATION

FOR INFORMATION ONLY

ACTION

ACTION 30 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, place the inoperable channel in the tripped condition within one hour* or declare the associated system inoperable.

b. With more than one channel inoperable, declare the associated system inoperable.

ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, ~~declare the associated ECCS inoperable.~~

ACTION 32 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.

ACTION 33 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated system inoperable.

ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 8 hours or declare the associated ECCS inoperable.

ACTION 35 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. For one trip system, place that trip system in the tripped condition within one hour* or declare the HPCI system inoperable.

b. For both trip systems, declare the HPCI system inoperable.

ACTION 36 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within one hour* or declare the HPCI system inoperable.

ACTION 37 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated emergency diesel generator inoperable and take the ACTION required by Specification ~~3.8.1.1~~ or 3.8.1.2 as appropriate.

ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, place the inoperable channel in the tripped condition within 1 hour;* operation may then continue until performance of the next required CHANNEL FUNCTIONAL TEST.

*The provisions of Specification 3.0.4 are not applicable.

TSUP TABLE 3.2.B-1

INSERT 2

FOR INFORMATION ONLY

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL MODE(S) CONDITIONS	ACTION
5. AUTOMATIC DEPRESSURIZATION SYSTEM (d) - TRIP SYSTEM B			
a. Reactor Vessel Water Level - Low Low, Level 1	2	1, 2, 3	30
b. Drywell Pressure - High (f)	2	1, 2, 3	30
c. ADS Timer	1	1, 2, 3	31
d. Core Spray Pump Discharge Pressure - High (Permissive)	1/loop/pump	1, 2, 3	31
e. LPCI Mode Pump Discharge Pressure - High (Permissive)	1/loop/pump	1, 2, 3	31
f. Reactor Vessel Water Level - Low, Level 3 (Permissive)	(1)	1, 2, 3	31
g. Manual Initiation	(1)/(valve)	1, 2, 3	31
h.			
d. Low Low Level Timer	1	1, 2, 3	31

INSERT 3

(f) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(g) With no LOCA signal present, there is an additional time delay of 5 ± 0.25 minutes.

(h) Reactor water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

~~(i) Provides signal to pump suction valves only.~~

(j) There is an inherent time delay of 7 ± 1.4 seconds on degraded voltage.

TO TABLE 3.2.B-1 Column 2

TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. CORE SPRAY SYSTEM		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥(-129) inches*	≥ (-136) inches
b. Drywell Pressure - High	≤ (1.69) psig	≤ (1.89) psig
c. Reactor Vessel Pressure - Low	≥(455) psig,(decreasing)	≥ (435) psig, (decreasing)
d. CSS Pump Discharge Flow - Low	≥ ( ) gpm	≥ ( ) gpm
e. Manual Initiation	NA	NA
f. _____	___	___
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥(-129) inches*	≥ (-136) inches
b. Drywell Pressure - High	≤ (1.69) psig	≤ (1.89) psig
c. Reactor Vessel Pressure - Low	≥(455) psig,(decreasing)	≥ (435) psig, (decreasing)
d. LPCI Pump Discharge Flow -Low	≥ ( ) gpm	≥ ( ) gpm
e. Manual Initiation	NA	NA
f. _____	___	___
3. HIGH PRESSURE COOLANT INJECTION SYSTEM		
a. Reactor Vessel Water Level - (Low Low, Level 2)	≥-(38) inches*	≥ (-45) inches
b. Drywell Pressure - High	≤ (1.69) psig	≤ (1.89) psig
c. Condensate Storage Tank Level - Low	≥ (x+3) inches (#)	≥ (X) inches (##)
d. Suppression Pool Water Level - High	≤ (Y-3) inches (##)	≤ (Y) inches
e. Reactor Vessel Water Level - High, Level 8	≤ (54) inches	≤ (54.5) inches
f. HPCI Pump Discharge Flow - Low	≥ ( ) gpm	≥ ( ) gpm
g. Manual Initiation	NA	NA
h. _____	___	___

Trip Setpoint (h)

2 Dresden 2.5 Quad Cities

84

750

≥ 300 psig & ≤ 350 psig

1000

10,000 gal

600

15'8" above bottom of chamber (Dresden)
14'8" above bottom of chamber (Quad Cities)

194 Dresden
201 Quad Cities

TO TABLE 3.2.B-1 column 2

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE (TRIP SETPOINT (h))
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Reactor Water Level - Low Low Low, Level 1	≥-129) inches*	≥ (-136) inches (2 Dresden 2,5 Quad Cities)
b. Drywell Pressure - High	≤ (1.69) psig	≤ (1.89) psig
c. ADS Timer	≤ (105) seconds	≤ (117) seconds (120)
d. Core Spray Pump Discharge Pressure - High	≥(145) psig,(increasing)	≥ (135) psig, (increasing), Subsystem A ≥ (155) psig, (increasing), Subsystem B
e. RHR LPCI Mode Pump Discharge Pressure-High	≥ (146) psig, increasing	≥ (116) psig, (increasing) Subsystem A ≥ (135) psig, (increasing), Subsystem B
f. Reactor Vessel Water Level-Low, Level 3	≥ (13) inches	≥ (11.5) inches (≥ 100 psig & ≤ 150 psig)
g. Manual Initiation	NA	NA
h. _____	—	
5. LOSS OF POWER		
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage (**))	a. 4.16 kv Basis - (2940)+(161) volts b. 120 v Basis - (84)+(4.6) volts c. ≤ (10) sec. time delay	(2940)±(315) volts (84)±(9) volts ≤ (10) sec. time delay
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	a. 4.16 kv Basis - (3727)+(9) volts b. 120 v Basis - (106.5)+(0.25) volts c. (10)±(0.5) sec. time delay	(3727)±(21) volts (106.5)±(0.60) volts (10)±(1.0) sec. time delay

Low Low Level Timer ≤ 8.5 min (Dresden) ≤ 9.0 min (Quad Cities)

INSERT 4

* See Bases Figure B 3/4 3-1.

(** This is an inverse time delay voltage relay. The voltages shown are the maximum that will not result in a trip. Some voltage conditions will result in decreased trip times.)

(# X is value that ensures adequate NPSH and precludes air entry due to vortexing.)

(## Y is (5) inches above normal water level.)

INSERT 4

DRESDEN ONLY

TO TABLE 3.2.B-1 Column 2

6. LOSS OF POWER	
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	2930 ± 146 volts decreasing voltage
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	≥ 3784 volts (Unit 2)[a][i] ≥ 3832 volts (Unit 3)[a][i]

QUAD CITIES ONLY

TO TABLE 3.2.B-1 column 2

	Trip Setpoint
6. LOSS OF POWER	
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	3045 ± 152 volts decreasing voltage
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	≥ 3845 volts (Unit 1)[a][i] ≥ 3833 volts (Unit 2)[a][i]

TABLE 3.3.3-3

EMERGENCY CORE COOLING SYSTEM RESPONSE TIMES

ECCS	RESPONSE TIME (Seconds)
1. CORE SPRAY SYSTEM	≤ (27)
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM	≤ (40)
3. AUTOMATIC DEPRESSURIZATION SYSTEM	NA
4. HIGH PRESSURE COOLANT INJECTION SYSTEM	≤ (30)
5. LOSS OF POWER	NA

FOR INFORMATION ONLY

FOR INFORMATION ONLY

2.8-1

TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. CORE SPRAY SYSTEM				
a. Reactor Vessel Water Level - Low Low (Low, Level 1) (d)	S	M	R	1, 2, 3, 4, 5
b. Drywell Pressure - High	S	M	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	M	R	1, 2, 3, 4, 5
d. CS Pump Discharge Flow - Low	S	M	R	1, 2, 3, 4, 5
e. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3, 4*, 5*
f.				
2. LOW PRESSURE COOLANT INJECTION (LPCI) subsystem				
a. Reactor Vessel Water Level - Low Low (Low, Level 1) (d)	S	M	R	1, 2, 3, 4, 5
b. Drywell Pressure - High	S	M	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	M	R	1, 2, 3, 4, 5
d. LPCI Pump Discharge Flow - Low	S	M	R	1, 2, 3, 4, 5
e. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3, 4*, 5*
f.				
3. HIGH PRESSURE COOLANT INJECTION SYSTEM (a)				
a. Reactor Vessel Water Level - Low Low (Level 2) (d)	S	M	R	1, 2, 3
b. Drywell Pressure - High	S	M	R	1, 2, 3
c. Condensate Storage Tank Level - Low	S	M	R	1, 2, 3
d. Suppression Pool (Chamber) Water Level - High	S	M	R	1, 2, 3
e. Reactor Vessel Water Level - High (Level 8) (TRIP)	S	M	R	1, 2, 3
f. HPCI Pump Discharge Flow - Low (Bypass)	S	M	R	1, 2, 3
g. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3
h.				

Permissive

Bypass

E (e)

E Quad Cities & Dresden

TABLE 4.3.2.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED (Applicable OPERATIONAL MODE(S))
4. AUTOMATIC DEPRESSURIZATION SYSTEM				
a. Reactor Vessel Water Level - Low Low (Low Level 1)	S	M	Q	1, 2, 3
b. Drywell Pressure - High (d)	S	M	R	1, 2, 3
c. ADS Timer	NA	M	E	1, 2, 3
d. Core Spray Pump Discharge Pressure - High (Permissive)	S	M	Q	1, 2, 3
e. RHR LPCI Mode Pump Discharge Pressure - High (Permissive)	S	M	Q	1, 2, 3
f. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
g. Manual Initiation	NA	(M(a)) (R)	NA	1, 2, 3
h.				
5. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	NA	NA E M	R	1, 2, 3, 4(b), 5(b) (c)
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	NA S	E M	R	1, 2, 3, 4(b), 5(b)

((a) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 day as part of circuitry required to be tested for automatic system actuation.)

When the system is required to be OPERABLE per Specification 3.5.1.

Required OPERABLE when ESF equipment is required to be OPERABLE.

Not required to be OPERABLE when reactor steam dome pressure is less than or equal to (100) psig.

associated diesel generator

≤ 150 psig

d. Low Low Level Timer NA E E 1,2,3

per Specification 3.9.B

(d) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(e) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency

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~~3/4.3.4 RECIRCULATION PUMP TRIP ACTUATION~~ INSTRUMENTATION

C. ATWS ~~RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION (Optional)~~

3.2 LIMITING CONDITION FOR OPERATION

~~3.3.4.1~~ The anticipated transient without scram recirculation pump trip (ATWS-RPT) ~~system~~ instrumentation channels shown in Table 3.~~3.4.1-1~~ shall be OPERABLE with their trip setpoints set consistent with values shown in the Trip Setpoint column ~~of Table 3.3.4.1-2~~.

APPLICABILITY: OPERATIONAL CONDITION 1.

ACTION:

1. a. With an ATWS ~~recirculation pump trip system~~ instrumentation channel trip setpoint less conservative than the value shown in the ~~Allowable~~ Values column of Table 3.~~3.4.1-2~~, declare the channel inoperable until the channel is restored to OPERABLE status with ~~the channel~~ trip setpoint adjusted consistent with the Trip Setpoint value.

2. b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement for one or both trip systems, ~~place the inoperable channel(s) in the tripped condition within one hour.~~

3. c. With the number of OPERABLE channels two or more less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system and:

   (a) 1. If the inoperable channels consist of one reactor vessel water level channel and one reactor vessel pressure channel, place both inoperable channels in the tripped condition within one hour.

   (b) 2. If the inoperable channels include two reactor vessel water level channels or two reactor vessel pressure channels, declare the trip system inoperable.

4. d. With one trip system inoperable, restore the inoperable trip system to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

5. e. With both trip systems inoperable, restore at least one trip system to OPERABLE status within one hour or be in at least STARTUP within the next 6 hours.

SURVEILLANCE REQUIREMENTS

1. ~~4.3.4.1.1~~ Each ATWS ~~recirculation pump trip system~~ instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.~~3.4.1-1~~.

2. ~~4.3.4.1.2~~ LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

(a) The inoperable CHANNEL(s) need not be placed in the tripped condition where this would cause the TRIP FUNCTION to occur.

FOR INFORMATION ONLY

GE-STS (BWR/4)

2.C-1

TABLE 3.~~3.4.1-1~~

-RPT

ATWS ~~RECIRCULATION PUMP TRIP SYSTEM~~ INSTRUMENTATION

Functional Unit / ~~Trip Function~~	Trip Setpoint (c)	Minimum OPERABLE Channels per Trip System (a)
1. Reactor Vessel Water Level - Low Low, ~~Level 2~~	≥ 84 inches (b)	2
2. Reactor Vessel Pressure - High	≤ 1250 psig (c)	2

FOR INFORMATION ONLY

3/4 3-37a

(b) Includes a time delay of $8 \leq t \leq 10$ seconds.

(c) Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

A

ALL CAPS

(a) One channel may be placed in an inoperable status for up to 2 hours for required surveillance provided ~~the other channel is OPERABLE~~ at least one OPERABLE CHANNEL in the same TRIP SYSTEM is monitoring that parameter.

† Without placing the TRIP SYSTEM in the tripped condition.

FOR INFORMATION ONLY

TABLE 3.3.4.1-2

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. Reactor Vessel, Water Level - Low Low, Level 2	≥ - (38) inches*	≥ - (45) inches
2. Reactor Vessel Pressure - High	≤ (1135) psig	≤ (1150) psig

INCORPORATED INTO TABLE 3.2.C-1, Column 2

*See Bases Figure B3/4 3-1.

FOR INFORMATION ONLY 2.C-1

TABLE 4.3.4.1-1

ATWS ~~RECIRCULATION PUMP TRIP ACTUATION~~ -RPT INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
1. Reactor Vessel Water Level - Low Low, ~~Level 2~~	S	M	$E^{(a)}$ R
2. Reactor Vessel Pressure - High	S	M	$E^{(a)}$ R

a. Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

QUAD CITIES ONLY

D. 3/4.3.5 REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION

3.2 LIMITING CONDITION FOR OPERATION

3.3.5 The reactor core isolation cooling (RCIC) system actuation instrumentation channels shown in Table 3.3.5-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.5-2.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3 with reactor steam dome pressure greater than (100) psig.

ACTION:

1. a. With a RCIC system actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.5-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

2. With one or more RCIC system actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.5-1.

4.2 SURVEILLANCE REQUIREMENTS

1. 4.3.5.1 Each RCIC system actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.5.1-1.

2. 4.3.5.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

FOR INFORMATION ONLY

TRIP SETPOINT (c)

2.0-1

TABLE 3.3.5-1

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
a. Reactor Vessel Water Level - Low Low, ~~Level 2~~	2 (4)	50 (40), 41
b. Reactor Vessel Water Level - High, ~~Level 8~~ (Trip)	2 (b)	51
c. Condensate Storage Tank ~~Water~~ Level - Low	(2) (c) (b)	52 (4a)
d. Suppression ~~Pool~~ Water Level - High, Chamber	(2) (c)	53
e. Manual Initiation	(1)/(system) (d)	(58) (43)

(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the ~~trip system~~ in the tripped condition provided ~~at least one other OPERABLE channel in the same trip system is monitoring that parameter~~. the FUNCTIONAL UNIT maintains RCIC actuation capability.

~~(b) One trip system with two out of two logic.~~
~~(c) One trip system with one out of two logic.~~
~~(d) One trip system with one channel.~~

(b.) Provides signal to pump suction valves only

(c.) Reactor Vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

QUAD CITIES ONLY

QUAD CITIES ONLY

Incorporated into TABLE 3.2.D-1, col 2

TABLE 3.3.5-2

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

FUNCTIONAL UNITS	TRIP SETPOINT	ALLOWABLE VALUE
a. Reactor Vessel Water Level - (Low Low, Level 2)	≥ - (38) inches*	≥ ( ) inches (84)
b. Reactor Vessel Water Level - High, Level (8)	≤ (54) inches*	≤ (55.5) inches (201)
c. Condensate Storage Tank Level - Low	≥ ( ) inches	≥ ~~) inches~~ 598' El.
d. Suppression Pool Water Level - High	≤ ( ) inches	≤ ( ) inches 14'8" above bottom of chamber
e. Manual Initiation	NA	NA

Trip Setpoint (c)

*See Bases Figure B 3/4 3-1.

FOR INFORMATION ONLY

QUAD CITIES ONLY

2.0-1

TABLE 3.3.5-1 (Continued)

REACTOR CORE ISOLATION COOLING SYSTEM

ACTUATION INSTRUMENTATION

ALL CAPS

40

ACTION 40 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement:

With one Channel inoperable

a. For one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition within one hour or declare the RCIC system inoperable.

With more than one CHANNEL inoperable,

b. For both trip systems, declare the RCIC system inoperable.

41

ACTION 41 - With the number of OPERABLE channels less than required by the minimum OPERABLE channels per trip system requirement, declare the RCIC system inoperable.

ALL CAPS

42

ACTION 42 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, place at least one inoperable channel in the tripped condition within one hour or declare the RCIC system inoperable.

ALL CAPS

43

ACTION 43 - With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement, restore the inoperable channel to OPERABLE status within 080 hours or declare the RCIC system inoperable.

FOR INFORMATION ONLY

QUAD CITIES ONLY

FOR INFORMATION ONLY

GE-STS (BWR/4)

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3.2.D-1

TABLE 4 ~~3.5.1-1~~

REACTOR CORE ISOLATION COOLING ~~SYSTEM~~ ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNITS	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
a. Reactor Vessel Water Level - Low Low, ~~Level 2~~	S	M	R
b. Reactor Vessel Water Level - High, ~~Level 8~~ (Trip)	S	M	R
c. Condensate Storage Tank Level - Low	(S) NA	M	(R) NA
d. Suppression ~~Pool~~ Chamber Water Level - High	(S) NA	M	(R)
e. Manual Initiation	NA	(M) ~~(8)~~ E	NA

(a) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days as part of circuitry required to be tested for automatic system actuation.

(a) Calibrate trip unit at least once every 31 days.

DRESDEN ONLY

INSTRUMENTATION

D. ~~3/4.3.9~~ ~~REACTOR CORE~~ ISOLATION CONDENSER ~~COOLING SYSTEM~~ ACTUATION ~~INSTRUMENTATION~~

3.2 LIMITING CONDITION FOR OPERATION

~~3.3.5~~ The ~~reactor core~~ isolation ~~cooling (RCIC) system~~ actuation instrumentation channels shown in Table 3.~~3.3.5-1~~ shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column ~~of Table 3.3.5-2~~.

APPLICABILITY: OPERATIONAL ~~CONDITIONS~~ 1, 2 and 3 with reactor steam dome pressure ~~greater than~~ ~~100~~ psig.

ACTION:

a. With ~~a RCIC system~~ actuation instrumentation channel trip setpoint less conservative than the value shown in the ~~Allowable Values~~ column of Table 3.~~3.3.5-2~~, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

b. With one or more ~~RCIC system~~ actuation instrumentation channels inoperable, take the ACTION required by Table 3.~~3.5-1~~.

4.2 SURVEILLANCE REQUIREMENTS

~~4.3.5.1~~ Each ~~RCIC system~~ actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.~~3.3.5-1~~.

~~4.3.5.2~~ LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

FOR INFORMATION ONLY

DRESDEN ONLY

FOR INFORMATION ONLY

2.D-1

TABLE 3.3.5.1

REACTOR CORE ISOLATION ~~COOLING SYSTEM~~ CONDENSER ACTUATION INSTRUMENTATION

FUNCTIONAL UNITS	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM(a)	ACTION
a. Reactor Vessel ~~Water Level - Low Low, Level 2~~ Pressure - High	2	50
b. Reactor Vessel Water Level - High, Level 8	2(b)	51
c. Condensate Storage Tank Water Level - Low	(2)(c)	52
d. Suppression Pool Water Level - High	(2)(c)	52
e. Manual Initiation	(1)/(system)(d)	(53)

40

(a) A channel may be placed in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition provided at least one other OPERABLE channel in the same trip system is monitoring that parameter.
(b) One trip system with two-out-of-two logic.
(c) One trip system with one-out-of-two logic.
(d) One trip system with one channel.

ALL CAPS

ALL CAPS

Trip Setpoint

≤ 1070 psig
for ≥ 15 seconds

FOR INFORMATION ONLY

2.0-1

TABLE 3.3.5-1 (Continued)

CONDENSER

REACTOR CORE ISOLATION COOLING SYSTEM

ACTUATION INSTRUMENTATION

ALL CAPS

40

ACTION 50 - With the number of OPERABLE Channels less than required by the Minimum OPERABLE Channels per Trip System requirement:

with one Channel inoperable

a. For one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition within one hour or declare the RCIC system inoperable. isolation condenser

b. For both trip systems, declare the RCIC system inoperable.

ACTION 51 - With the number of OPERABLE channels less than required by the minimum OPERABLE channels per Trip System requirement, declare the RCIC system inoperable.

ACTION 52 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement, place at least one inoperable channel in the tripped condition within one hour or declare the RCIC system inoperable.

ACTION 53 - With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement, restore the inoperable channel to OPERABLE status within (8) hours or declare the RCIC system inoperable.

With more than one CHANNEL inoperable, declare the isolation condenser system inoperable.

FOR INFORMATION ONLY DRESDEN ONLY

GE-STS (BWR/4)

TABLE 3.3.5-2

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

FUNCTIONAL UNITS	TRIP SETPOINT	ALLOWABLE VALUE
a. Reactor Vessel Water Level - Low Low, Level 2	≥ - (38) inches*	≥ -( ) inches
b. Reactor Vessel Water Level - High, Level 8	≤ (54) inches*	≤ (55.5) inches
c. Condensate Storage Tank Level - Low	≥ ( ) inches	≥ ( ) inches
d. Suppression Pool Water Level - High	≤ ( ) inches	≤ ( ) inches
e. Manual Initiation	NA	NA

*See Bases Figure B 3/4 3-1.

FOR INFORMATION ONLY

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2.0-1

CONDENSER

TABLE 4.3.2.1-1

REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNITS	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
a. Reactor Vessel Water Level - (Low Low, Level 2) Pressure-High	NA	M	R
b. Reactor Vessel Water Level - High, Level 8	S	M	R
c. Condensate Storage Tank Level - Low	(S)	M	(R)
d. Suppression Pool Water Level - High	(S)	M	(R)
e. Manual Initiation	NA	(M)(a) (R)	NA

(a) Manual initiation switches shall be tested at least once per 18 months during shutdown. All other circuitry associated with manual initiation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days as part of circuitry required to be tested for automatic system actuation.

(a) Calibrate trip unit at least once per 31 days

GE-STS (BWR/4)

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FOR INFORMATION ONLY

E. 3/4.3.6 CONTROL ROD BLOCK INSTRUMENTATION

3.2 LIMITING CONDITION FOR OPERATION

3.3.6 The control rod block instrumentation channels shown in Table 3.3.6-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.6-2.

APPLICABILITY: As shown in Table 3.3.6-1.

ACTION:

a. With a control rod block instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.6-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, take the ACTION required by Table 3.3.6-1.

4.2 SURVEILLANCE REQUIREMENTS

4.3.6 Each of the above required control rod block trip systems and instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.6-1.

FOR INFORMATION ONLY

Trip setpoint

2.E-1

TABLE 3.~~5.6-1~~

CONTROL ROD BLOCK INSTRUMENTATION

Functional unit

Mode(s)

TRIP FUNCTION	MINIMUM ~~OPERABLE~~ CHANNELS PER TRIP FUNCTION	APPLICABLE OPERATIONAL ~~CONDITION~~	ACTION
1. ROD BLOCK MONITOR[a]			
a. Upscale	2	1	60
b. Inoperative	2	1	60
c. Downscale	2	1	60
2. APRM			
a. Flow Biased Neutron Flux - ~~Upscale~~ High	1. Dual Recirculation Loop Operation: 4	1	61
	2. Single Recirculation Loop Operation: 4	1	61
b. Inoperative	4	1, 2, 5	60
c. Downscale	4	1	60
d. Neutron Flux - ~~Upscale~~, Startup	4	2, 5	60
3. SOURCE RANGE MONITORS			
a. Detector not full in[b]	3	2	61
	2	5	60
b. Upscale[c]	3	2	61
	2	5	60
c. Inoperative[c]	3	2	61
	2	5	60
d. Downscale[d]	3	2	61
	2	5	60
4. INTERMEDIATE RANGE MONITORS ~~[e]~~			
a. Detector not full in ~~[e]~~	6	2, 5	61
b. Upscale	6	2, 5	60
c. Inoperative	6	2, 5	60
d. Downscale[e]	6	2, 5	60
5. SCRAM DISCHARGE VOLUME			
a. Water Level-High	1 per bank	1, 2, 5	62
b. ~~Scram Trip~~ Bypass	1	~~1, 2~~ 5	62
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW			
a. Upscale	2	1	62
b. Inoperative	2	1	62
c. (Comparator) (Downscale)	2	1	62

SDV switch in

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TABLE 3.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION

ACTION 50 - Declare the RBM inoperable and take the ACTION required by Specification 3.1.4.3.

ACTION 51 - With the number of OPERABLE Channels:

a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.

b. Two or more less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within one hour.

ACTION 52 - With the number of OPERABLE Channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.

TABLE NOTATION

(f) With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

(g) With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

a. The RBM shall be automatically bypassed when a peripheral control rod is selected or the reference APRM channel indicates less than 30% of RATED THERMAL POWER.

b. This function shall be automatically bypassed if detector count rate is > 100 cps or the IRM channels are on range 3 or higher.

c. This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

d. This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

e. This function shall be automatically bypassed when the IRM channels are on range 1.

INSERT 5

INSERT 5

from STS TABLE 3.3.6-2

(h) The Average Power Range Monitor rod block function is varied as a function of recirculation drive flow (W). The trip setting of this function must be maintained in accordance with Specification 3.11.B. W is equal to the percentage of the drive flow required to produce a rated core flow of 98×10^6 lbs/hr.

(i) Shall be ≥ 0.7 cps provided signal-to-noise ratio is ≥ 2.0.

(j) Required to be OPERABLE only during SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

FOR INFORMATION ONLY

1. Dual Recirculation Loop operation ≤ (0.58W + 50) (h)
2. Single Recirculation Loop operation ≤ (0.58W+45.5) (h)

TABLE 3.3.6-2

CONTROL ROD BLOCK INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	Trip Setpoint — ALLOWABLE VALUE
1. ROD BLOCK MONITOR		As specified in the COLR
a. Upscale	≤ 0.66 W + (40)%	~~≤ 0.66 W + (43)%~~
b. Inoperative	NA	NA
c. Downscale	≥ (5)% of RATED THERMAL POWER	≥ ~~(3)% of RATED THERMAL POWER~~ 5/125 of full scale – Dresden; 3/125 of full scale – Quad Cities
2. APRM		
a. Flow Biased Neutron Flux - Upscale	≤ 0.66 W + (42)%*	~~≤ 0.66 W + (45)%~~
b. Inoperative	NA	NA
c. Downscale	≥ (5)% of RATED THERMAL POWER	≥ ~~(3)% of RATED THERMAL POWER~~ 3/125 of full scale
d. Neutron Flux - Upscale, Startup	≤ (12)% of RATED THERMAL POWER	≤ ~~(14)% of RATED THERMAL POWER~~ 12/125 of full scale
3. SOURCE RANGE MONITORS		
a. Detector not full in	NA	NA
b. Upscale	≤ (2 x 10^5) cps	≤ ~~(5 x 10^5)~~ (1) cps
c. Inoperative	NA	NA
d. Downscale	≥ (3) cps	≥ ~~(2)~~ 3/2 cps
4. INTERMEDIATE RANGE MONITORS		
a. Detector not full in	NA	NA
b. Upscale	≤ (108/125) divisions of full scale	≤ ~~(110/125) divisions~~ 109/125 of full scale
c. Inoperative	NA	NA
d. Downscale	≥ (5/125) divisions of full scale	≥ ~~(3/125) divisions~~ 5/125 – Dresden; 3/125 – Quad Cities of full scale
5. SCRAM DISCHARGE VOLUME		
a. Water Level-High	≤ ( ) inches	≤ ~~(2)~~ 25 gal. inches
b. Scram Trip Bypass	NA	NA
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW		
a. Upscale	≤ (108/125) divisions of full scale	≤ (111/125) divisions of full scale
b. Inoperative	NA	NA
c. (Comparator) (Downscale)	≤ (10)% flow deviation	≤ (11)% flow deviation

FOR INFORMATION ONLY

(h) The Average Power Range Monitor rod block function is varied as a function of recirculation ~~loop~~ drive flow (W). The trip setting of this function must be maintained in accordance with Specification 3 ~~2~~ 11.B.

TO "TABLE ..."

W is equal to the percentage of the drive flow required to produce a rated core flow of 98×10^6 lbs/hr.

FOR INFORMATION ONLY

TABLE 4.3.6-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. ROD BLOCK MONITOR				
a. Upscale	NA	S/U[b][c],M[c]	Q	1
b. Inoperative	NA	S/U[b][c],M[c]	NA	1
c. Downscale	NA	S/U[b][c],M[c]	Q	1
2. APRM				
a. Flow Biased Neutron Flux - High	NA	S/U[b],M	Q	1
b. Inoperative	NA	S/U[b],M	NA	1, 2, 5
c. Downscale	NA	S/U[b],M	Q	1
d. Neutron Flux - Upscale, Startup	NA	S/U[b],M	SA	2, 5
3. SOURCE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2, 5
b. Upscale	NA	S/U[b],W	Q	2, 5
c. Inoperative	NA	S/U[b],W	NA	2, 5
d. Downscale	NA	S/U[b],W	Q	2, 5
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	S/U[b],W	NA	2, 5
b. Upscale	NA	S/U[b],W	Q	2, 5
c. Inoperative	NA	S/U[b],W	NA	2, 5
d. Downscale	NA	S/U[b],W	Q	2, 5
5. SCRAM DISCHARGE VOLUME				
a. Water Level-High	NA	M	NA	1, 2, 5
b. Scram Trip Bypass	NA	M	NA	(1, 2,) 5
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW				
a. Upscale	NA	S/U[b],M	Q	1
b. Inoperative	NA	S/U[b],M	NA	1
c. (Comparator) (Downscale)	NA	S/U[b],M	Q	1
1. Dual Recirculation Loop Operation	NA	S/U[b],M	SA	1
2. Single Recirculation Loop Operation	NA	S/U[b],M	SA	1

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TABLE 4.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATION

NOTES:

a. Neutron detectors may be excluded from CHANNEL CALIBRATION.

b. Within 24 hours prior to startup, ~~if not performed within the previous 7 days.~~

c. Includes reactor manual control ~~multiplexing~~ system input.

With THERMAL POWER ≥ 30% of RATED THERMAL POWER.

With more than one control rod withdrawn. Not applicable to control rods removed per Specification ~~3.9.10.1~~ or ~~3.9.10.2~~.

INSERT 6

FOR INFORMATION ONLY

FOR INFORMATION ONLY

INSERT 6

(f) This function shall be automatically bypassed if detector count rate is >100 cps or the IRM channels are on range 3 or higher.

(g) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

(h) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

(i) This function shall be automatically bypassed when the IRM channels are on range 1.

(j) The provisions of Specification 4.0.D are not applicable to the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION surveillances for entry into the applicable OPERATIONAL MODE(s) from OPERATIONAL MODE 1 provided the surveillances are performed within 12 hours after such entry

(k) Required to be OPERABLE only during SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

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F. ACCIDENT MONITORING ~~INSTRUMENTATION~~

3.2 LIMITING CONDITION FOR OPERATION

All CAPS

3.3.7.5 The accident monitoring instrumentation channels shown in Table 3.~~3.7.5-1~~ shall be OPERABLE.

2.F-1

APPLICABILITY: As shown in Table 3.~~3.7.5-1~~

ACTION:

With one or more accident monitoring instrumentation channels inoperable, take the ACTION required by Table 3.~~3.7.5-1~~.

All CAPS

4.2 SURVEILLANCE REQUIREMENTS

~~4.3.7.5~~ Each of the above required accident monitoring instrumentation channels shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.~~3.7.5-1~~

2.F-1

for the OPERATIONAL MODE(S) and

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2.F-1

TABLE 3.~~3.7.5.1~~

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT(ATION)	REQUIRED ~~NUMBER~~ OF CHANNELS	MINIMUM CHANNELS ~~OPERABLE~~	APPLICABLE OPERATIONAL ~~CONDITIONS~~ MODE(S)	ACTION
1. Reactor Vessel Pressure	2	1	1,2	60
2. Reactor Vessel Water Level	2	1	1,2	60
3. ~~Suppression Chamber~~ Water Level - WIDE RANGE (Torus)	2	1	1,2	60
4. ~~Suppression Chamber~~ Water Temperature	2/~~sector~~	1/~~sector~~	1,2	60
5. ~~Suppression Chamber Air Temperature~~	~~2~~	~~1~~	~~1,2~~	~~80~~
6. Drywell Pressure - WIDE RANGE	2	1	1,2	60
7. Drywell Air Temperature - Analyzer and Monitor	2	1	1,2	60
8. Drywell Oxygen Concentration	2	1	1,2	62
9. Drywell Hydrogen Concentration Analyzer and Monitor	2	1	1,2	62
10. Safety/Relief Valve Position Indicators	2/valve (1 each)	1/valve	1,2	63
~~11. In-Core Thermocouples~~ - Acoustic & Temperature	~~4~~ (1 per core quadrant)	~~(2)~~ (1 each of two core quadrants)	1,2	80
11. (Source Range) Neutron Monitors	2	2	1,2	60
12. ~~Primary Containment Gross~~ Radiation Monitors (Drywell)	2	1	1,2,3	81
13. Reactor Building Ventilation Exhaust Monitor#	1	1	1,2,3	81
14. Offgas and Radwaste Area Exhaust Monitor#	1	1	1,2,3	81
15. Fuel Handling Area Ventilation Exhaust Monitor#	1	1	1,2,3	81
16. Turbine Building Ventilation Exhaust Monitor#	1	1	1,2,3	81
17. Standby Gas Treatement System Exhaust Monitor#	1	1	1,2,3	81

#High range noble gas monitors.

6. Drywell Pressure - Narrow Range 2 1 1,2 60

GE-STS (BWR/4)

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QUAD CITIES ONLY

2.F-1

TABLE 3.~~3.7.5-1~~

FOR INFORMATION ONLY

ACCIDENT MONITORING INSTRUMENTATION

GE-STS (BWR/4)

INSTRUMENTATION	REQUIRED ~~NUMBER~~ OF CHANNELS	MINIMUM CHANNELS ~~OPERABLE~~	APPLICABLE OPERATIONAL ~~CONDITIONS~~ MODE(s)	ACTION
1. Reactor Vessel Pressure	2	1	1,2	80, 60
2. Reactor Vessel Water Level	2	1	1,2	80
3. ~~Suppression Chamber~~ Water Level - WIDE RANGE	2	1	1,2	80
4. ~~Suppression Chamber~~ Water Temperature	2/~~sector~~	1/~~sector~~	1,2	80
5. ~~Suppression Chamber~~ Air Temperature	2	1	1,2	80, 60
6. Drywell Pressure - WIDE RANGE	2	1	1,2	80, 60
7. Drywell Air Temperature - Analyzer and Monitor	2	1	1,2	80, 62
8. Drywell Oxygen Concentration	2	1	1,2	80
9. Drywell Hydrogen Concentration Analyzer and Monitor	2	1	1,2	80, 63
10. Safety/Relief Valve Position Indicators	2/valve (1 each)	1/valve	1,2	80
~~11. In-Core Thermocouples~~ - Acoustic & Temperature	(4)/(1 per core quadrant)	(2)/(1 each of two core quadrants)	1,2	80
11. (Source Range) Neutron Monitors	2	2	1,2	60
12. ~~Primary Containment Gross~~ Radiation Monitors	2	1	1,2,3	80, 61
~~13. Reactor Building Ventilation Exhaust Monitor#~~	~~1~~	~~1~~	~~1,2,3~~	~~81~~
14. Offgas and Radwaste Area Exhaust Monitor#	1	1	1,2,3	81
15. Fuel Handling Area Ventilation Exhaust Monitor#	1	1	1,2,3	81
16. Turbine Building Ventilation Exhaust Monitor#	1	1	1,2,3	81
17. Standby Gas Treatement System Exhaust Monitor#	1	1	1,2,3	81

~~#High range noble gas monitors.~~

6. Drywell Pressure - Narrow Range 2 1 1,2 60

INSERT 7

ACTION 62- a. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) one less than the Required CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

b. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1; and provided the high radiation sampling system (HRSS) combustible gas monitoring capability for the drywell is OPERABLE; restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

c. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1; and the HRSS combustible gas monitoring capability for the drywell inoperable; restore at least one inoperable CHANNEL to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.

FOR INFORMATION ONLY

ACTION 63 - a. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Required CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status prior to startup from a COLD SHUTDOWN of longer than 72 hours.

b. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

FOR INFORMATION ONLY

Table 3.3.7.5-1 (Continued)

ACCIDENT MONITORING INSTRUMENTATION
ACTION STATEMENTS

ACTION 80 -

a. With the number of OPERABLE accident monitoring instrumentation channels less than the Required Number of Channels shown in Table 3.3.7.5-1, restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.

b. With the number of OPERABLE accident monitoring instrumentation channels less than the Minimum Channels OPERABLE requirements of Table 3.3.7.5-1, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.

ACTION 81 - With the number of OPERABLE accident monitoring instrumentation channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel(s) to OPERABLE status within 72 hours, or:

a. Initiate the preplanned alternate method of monitoring the appropriate parameter(s), and

b. ~~In lieu of any other report required by Specification 6.9.1,~~ prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

Either restore the inoperable CHANNEL(s) to OPERABLE STATUS within 7 days of the event, or

INSERT 7 →

FOR INFORMATION ONLY

DRESDEN ONLY

GE-STS (BWR/4)

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2.F-1

TABLE 4.3.7.5-1

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	APPLICABLE OPERATIONAL CONDITIONS
1. Reactor Vessel Pressure	M	R E	1,2
2. Reactor Vessel Water Level	M	R	1,2
3. ~~Suppression Chamber~~ Water Level - Wide Range	M	R E	1,2
4. ~~Suppression Chamber~~ Water Temperature	M	R	1,2
5. ~~Suppression Chamber Air Temperature~~	~~M~~	~~R~~	~~1,2~~
6. ~~Primary Containment~~ Pressure	M	R E	1,2
7. Drywell Air Temperature	M	R	1,2
8. Drywell Oxygen Concentration - Analyzer and Monitor	M	R E	1,2
9. Drywell Hydrogen Concentration Analyzer and Monitor	M	Q(3) (a)	1,2
10. Safety/Relief Valve Position Indicators - Acoustic Temperature	M	R E	1,2
11. In-Core Thermocouples (Source Range) Neutron Monitors	M	E (c)	1,2
12. ~~Primary Containment Gross Radiation Monitors~~	M	R E (b)	1,2,3
13. Reactor Building Ventilation Exhaust Monitor#	M	R	1,2,3
14. Offgas and Radwaste Area Exhaust Monitor#	M	R	1,2,3
15. Fuel Handling Area Ventilation Exhaust Monitor#	M	R	1,2,3
16. Turbine Building Ventilation Exhaust Monitor#	M	R	1,2,3
17. Standby Gas Treatment System Exhaust Monitor#	M	R	1,2,3

(a) Using sample gas containing:
a. One volume percent hydrogen, balance nitrogen.
b. Four volume percent hydrogen, balance nitrogen.

(b) CHANNEL CALIBRATION shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr and a one point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

~~#High range noble gas monitors~~ c. Neutron detectors may be excluded from the CHANNEL CALIBRATION.

6. Drywell Pressure - Narrow Range M E 1,2

QUAD CITIES ONLY

FOR INFORMATION ONLY

2.F-1

TABLE 4.3.7.5-1

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	APPLICABLE OPERATIONAL CONDITIONS
1. Reactor Vessel Pressure	M	R E	1,2
2. Reactor Vessel Water Level	M	R	1,2
3. ~~Suppression Chamber~~ Water Level	M	R E	1,2
4. ~~Suppression Chamber~~ Water Temperature	M	R	1,2
5. ~~Suppression Chamber~~ Air Temperature	M	R E	1,2
6. ~~Primary Containment~~ Pressure	M	R E	1,2
7. Drywell Air Temperature	M	R	1,2
8. Drywell Oxygen Concentration	M	R E	1,2
9. Drywell Hydrogen Concentration Analyzer and Monitor	M	Q R a	1,2
10. Safety/Relief Valve Position Indicators	M	R E	1,2
11. ~~In-Core Thermocouples~~	M	R E (c)	1,2
12. ~~Primary Containment Gross~~ Radiation Monitors	M	R E (b)	1,2,3
13. Reactor Building Ventilation Exhaust Monitor#	M	R	1,2,3
14. Offgas and Radwaste Area Exhaust Monitor#	M	R	1,2,3
15. Fuel Handling Area Ventilation Exhaust Monitor#	M	R	1,2,3
16. Turbine Buidling Ventilation Exhaust Monitor#	M	R	1,2,3
17. Standby Gas Treatment System Exhaust Monitor#	M	R	1,2,3

(a) Using sample gas containing:
a. One volume percent hydrogen, balance nitrogen.
b. Four volume percent hydrogen, balance nitrogen.

(b) CHANNEL CALIBRATION shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr and a one point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

~~#High range noble gas monitors.~~

(c) Neutron detectors may be excluded from the CHANNEL CALIBRATION.

6. Drywell Pressure - Narrow Range M E 1,2

GE-STS (BWR/4)

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INSTRUMENTATION

G. SOURCE RANGE MONITORS (SRM)

3.2 LIMITING CONDITION FOR OPERATION

3.3.7.6 At least the following source range monitor channels shall be OPERABLE:

a. In OPERATIONAL CONDITION 2, three.

b. In OPERATIONAL CONDITION 3 and 4, two.

APPLICABILITY: OPERATIONAL CONDITIONS 2, 3 and 4.

ACTION:

a. In OPERATIONAL CONDITION 2 with one of the above required source range monitor channels inoperable, restore at least 3 source range monitor channels to OPERABLE status within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours.

b. In OPERATIONAL CONDITION 3 or 4 with one or more of the above required source range monitor channels inoperable, verify all insertable control rods to be inserted in the core and lock the reactor mode switch in the Shutdown position within one hour.

4.2 SURVEILLANCE REQUIREMENTS

4.3.7.6 Each of the above required source range monitor channels shall be demonstrated OPERABLE by:

a. Performance of a:

1. CHANNEL CHECK at least once per:

a) 12 hours in CONDITION 2, and

b) 24 hours in CONDITION 3 or 4.

2. CHANNEL CALIBRATION at least once per 18 months.

b. Performance of a CHANNEL FUNCTIONAL TEST:

1. Within 24 hours prior to moving the reactor mode switch from the Shutdown position, if not performed within the previous 7 days, and

2. At least once per 31 days.

c. Verifying, prior to withdrawal of control rods, that the SRM count rate is at least 3 cps with the detector fully inserted.

With IRM's on range 2 or below.

Neutron detectors may be excluded from CHANNEL CALIBRATION.

May be reduced to 0.7 cps provided the signal to noise ratio is ≥ 2.0.

c. The provisions of Specification 4.0.D are not applicable for entry into the applicable OPERATIONAL MODE(S) from OPERATIONAL MODE 1, provided the surveillance is performed within 12 hours after such entry.

INSTRUMENTATION

FOR INFORMATION ONLY

TRAVERSING IN-CORE PROBE SYSTEM

LIMITING CONDITION FOR OPERATION

3.3.7.7. The traversing in-core probe system shall be OPERABLE with:

a. ~~Three~~ five movable detectors, drives and readout equipment to map the core, and

b. Indexing equipment to allow all ~~three~~ five detectors to be calibrated in a common location.

APPLICABILITY: When the traversing in-core probe is used for:

a. Recalibration of the LPRM detectors, and

b.* Monitoring the APLHGR, LHGR, MCPR, or ~~(TPF) (MFLPD)~~.

ACTION:

With the traversing in-core probe system inoperable, suspend use of the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.7 The traversing in-core probe system shall be demonstrated OPERABLE by normalizing each of the above required detector outputs within 72 hours prior to use for the ~~above applicable monitoring or~~ calibration functions.

LPRM

FOR INFORMATION ONLY

*Only the detector(s) in the required measurement location(s) are required to be OPERABLE.

I. Suppression Chamber and Drywell Spray Actuation

INSTRUMENTATION

~~3/4.3.9 PLANT SYSTEMS~~ ACTUATION INSTRUMENTATION

3.2 LIMITING CONDITION FOR OPERATION

~~3.3.9~~ The ~~plant systems~~ Suppression Chamber and Drywell Spray actuation instrumentation CHANNELS (ALL CAPS) shown in Table ~~3.3.9-1~~ 2.I-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table ~~3.3.9-1~~ 2.I-1.

APPLICABILITY: ~~As shown in Table 3.3.9-1.~~ OPERATIONAL MODE(S) 1, 2, & 3

ACTION:

a. With a ~~plant system~~ Suppression Chamber and Drywell Spray actuation instrumentation CHANNEL (ALL CAPS) trip setpoint (Trip SETPOINT) less conservative than the value shown in the ~~Allowable Values~~ column of Table ~~3.3.9-2~~ 2.I-1, declare the CHANNEL inoperable and ~~either place the inoperable channel in the tripped condition until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value, or declare the associated system inoperable.~~ take the ACTION ~~required~~ shown by Table ~~3.3.9-1~~ 2.I-1.

b. For the suppression pool (and drywell) spray system:

1. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place at least one inoperable channel in the tripped condition within one hour or declare the associated system inoperable.

2. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, declare the associated system inoperable.

c. For the feedwater system/main turbine trip system:

1. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement, restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours.

2. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

d. With one or more plant systems actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.9-1.

I. Suppression Chamber and Drywell Spray Actuation

INSTRUMENTATION

4.2 SURVEILLANCE REQUIREMENTS

1. Suppression Chamber and Drywell Spray (All CAPS)

4.3.9.1 Each ~~plant system~~ actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations ~~for the OPERATIONAL CONDITIONS and~~ at the frequencies shown in Table 4.~~3.9.1-1~~. (2.I-1)

~~4.3.9.2~~ LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

(All CAPS)

FOR INFORMATION ONLY

FOR INFORMATION ONLY

Suppression Chamber and Drywell Spray

2.I-1

TABLE 3.~~3.9-1~~

PLANT SYSTEMS ACTUATION INSTRUMENTATION

FUNCTIONAL UNIT (TRIP FUNCTION)	Trip Setpoint (a)	MINIMUM ~~OPERABLE~~ CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. ~~SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM~~				
a. Drywell Pressure-High (permissive)	$0.5 \leq p \leq 1.5$ psig	1 2	1, 2, 3	80
~~b. Containment Pool Pressure High~~		~~1~~	~~1, 2, 3~~	~~85~~
c. Reactor Vessel Water Level - Low ~~Low Low, Level 1~~ (permissive)	$\geq$ -48 inches	1	1, 2, 3	85
d. Timers				
1) ~~System A~~		1	1, 2, 3	85
2) ~~System B~~		1	1, 2, 3	85
2. FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM		MINIMUM OPERABLE CHANNELS		
a. Reactor Vessel Water Level-High, Level (8)		3 PER TRIP SYSTEM	1	85

INSERT 8

INSERT 8

ACTION

ACTION 80 - a. With the number of OPERABLE CHANNEL(s) less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM, place at least one inoperable CHANNEL in the tripped condition[a] within one hour or declare the suppression chamber and drywell sprays inoperable.

b. With the number of OPERABLE CHANNEL(s) less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for both TRIP SYSTEM(s), declare the suppression chamber and drywell sprays inoperable.

---

a Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

b If an instrument is inoperable, it shall be placed (or simulated) in a tripped condition so that it will not prevent a containment spray.

TABLE 3.3.9-1 (Continued)

PLANT SYSTEMS ACTUATION INSTRUMENTATION

ACTION

ACTION 85 - a. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place at least one inoperable ~~channel~~ in the tripped condition within one hour or declare the associated system inoperable.

b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, declare the associated system inoperable.

ACTION 86 - a. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours

b. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

2.F-1

TABLE 3.3.9-2

PLANT SYSTEMS ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM		
a. Drywell Pressure-High	≤ (1.69) psig	≤ (1.89) psig
b. Containment Pressure-High	≤ (35) psig	≤ ( ) psig
c. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -( ) psig	≥ -( ) psig
d. Timers		
1) System A	≤ (12) minutes	≤ (13.2) minutes
2) System B	≤ (14) minutes	≤ (15.4) minutes
2. FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM		
a. Reactor Vessel Water Level-High, Level (8)	≤ (54.5) inches*	≤ (56.0) inches

*See Bases Figure B 3/4 3-1.

Suppression Chamber and Drywell Spray

2.I-1

TABLE 4.~~3.9.1-1~~ ~~Continued~~

PLANT SYSTEMS ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM		NA	M	Q	
1. a. Drywell Pressure-High		~~(NA)~~	~~(M)~~	~~(Q)~~	1, 2, 3
~~b. Containment Pressure-High~~		~~(NA)~~	~~(M)~~	~~(Q)~~	1, 2, 3
a. c. Reactor Vessel Water Level-Low ~~Low Low, Level 1~~	D	~~(NA)~~	~~(M)~~ M	~~(Q)~~ E (a)	1, 2, 3
~~d. Timers~~		~~(NA)~~	~~(M)~~	~~(M)~~	~~1, 2, 3~~
2. FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM					
a. Reactor Vessel Water Level-High, Level (8)		~~(NA)~~ D	~~(M)~~	~~(R)~~	1

a. Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency indicated in the table.

J. Feedwater Pump TRIP

INSTRUMENTATION

~~3/4.3.9 PLANT SYSTEMS ACTUATION INSTRUMENTATION~~

3.2 LIMITING CONDITION FOR OPERATION

feedwater pump TRIP

~~3.3.9~~ The ~~plant systems actuation~~ instrumentation channels shown in Table ~~3.3.9-1~~ shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table ~~3.3.9-2~~.

2.J-1

2.J-1

APPLICABILITY: ~~As shown in Table 3.3.9-1~~

OPERATIONAL MODE 1

ACTION:

All CAPS

TRIP SETPOINT

Feedwater pump TRIP

a. With a ~~plant system actuation~~ instrumentation channel trip setpoint less conservative than the value shown in the ~~Allowable Values~~ column of Table ~~3.3.9-2~~, declare the channel inoperable and ~~either place the inoperable channel in the tripped condition until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value, or declare the associated system inoperable.~~ take the ACTION ~~Statement~~ (1) Table 3.~~3.9-1~~ shown in

2.J-1

b. For the suppression pool (and drywell) spray system:

1. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place at least one inoperable channel in the tripped condition within one hour or declare the associated system inoperable.

2. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, declare the associated system inoperable.

c. For the feedwater system/main turbine trip system:

1. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement, restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours.

2. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

d. With one or more plant system actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.9-1.

Feed water pump TRIP

INSTRUMENTATION

4.2 SURVEILLANCE REQUIREMENTS

J.

All CAPS

~~4.3.2.8~~ Each ~~plant system actuation~~ instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations ~~for the OPERATIONAL CONDITIONS and~~ at the frequencies shown in Table 4.~~3.2-1~~. 2.3-1

~~4.3.2.9~~ LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

All CAPS

Feedwater pump TRIP

2.3-1

TABLE 3.3.9-1

~~PLANT SYSTEMS ACTUATION~~ INSTRUMENTATION

~~TRIP FUNCTION~~ FUNCTIONAL UNIT	MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM			
a. Drywell Pressure-High	1	1, 2, 3	85
b. Containment Pool Pressure-High	1	1, 2, 3	85
c. Reactor Vessel Water Level - Low Low Low, Level 1	1	1, 2, 3	85
d. Timers			
1) System A	1	1, 2, 3	85
2) System B	1	1, 2, 3	85
2. FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM			
a. Reactor Vessel Water Level-High ~~Level (8)~~	MINIMUM ~~OPERABLE~~ CHANNELS 2	1	90

~~PER TRIP SYSTEM~~

Trip Setpoint (a)

≤ 201 inches

INSERT 9

INSERT 9

ACTION

ACTION 90 - a. With the number of OPERABLE CHANNEL(s) one less than required by the Minimum CHANNEL(s) requirement, restore the inoperable CHANNEL to OPERABLE status within 7 days or place the inoperable CHANNEL in the tripped condition within the next 8 hours.

b. With the number of OPERABLE CHANNEL(s) two less than required by the Minimum CHANNEL(s) requirement, restore at least one of the inoperable CHANNEL(s) to OPERABLE status within 72 hours or be in at least STARTUP within the next 8 hours.

---

a Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

TABLE 3.3.9-1 (Continued)

PLANT SYSTEMS ACTUATION INSTRUMENTATION

ACTION

ACTION 85 - a. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place at least one inoperable channel in the tripped condition within one hour or declare the associated system inoperable.

FOR INFORMATION ONLY

b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, declare the associated system inoperable.

ACTION 86 - a. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours

b. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

TABLE 3.3.9-2

PLANT SYSTEMS ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM		
a. Drywell Pressure-High	≤ (1.69) psig	≤ (1.89) psig
b. Containment Pressure-High	≤ (35) psig	≤ ( ) psig
c. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -( ) psig	≥ -( ) psig
d. Timers		
1) System A	≤ (12) minutes	≤ (13.2) minutes
2) System B	≤ (14) minutes	≤ (15.4) minutes
2. FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM		
a. Reactor Vessel Water Level-High, Level (8)	≤ (54.5) inches*	≤ (56.0) inches

*See Bases Figure B 3/4 3-1.

FOR INFORMATION ONLY

2.5-1

Feedwater pump TRIP

TABLE 4.3.9.1-1 (Continued)

PLANT SYSTEMS ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT / TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. SUPPRESSION POOL (AND DRYWELL) SPRAY SYSTEM				
a. Drywell Pressure-High	(NA) D	(M)	(Q)	1, 2, 3
b. Containment Pressure-High	(NA) D	(M)	(Q)	1, 2, 3
c. Reactor Vessel Water Level-Low Low Low, Level 1	(NA) D	(M)	(Q)	1, 2, 3
d. Timers	(NA) D	(M)	(R)	1, 2, 3
2 FEEDWATER SYSTEM/MAIN TURBINE TRIP SYSTEM				
a. Reactor Vessel Water Level-High, Level (8)	(NA) D	(M) E	(R) E	1 X

QUAD CITIES ONLY

INSTRUMENTATION

K. TOXIC GAS MONITORING

~~CHLORINE (AND AMMONIA) DETECTION SYSTEM (Optional)~~

3.2 LIMITING CONDITION FOR OPERATION

The TOXIC GAS MONITORING

~~3.3.7.8~~ ~~Two independent chlorine (and ammonia) detection~~ system ~~subsystems~~ shall be OPERABLE with ~~their (alarm) (trip)~~ setpoints adjusted to actuate at the alarm/trip a:

a. Chlorine concentration of less than or equal to (5) ppm, and

b. an Ammonia concentration of less than or equal to ~~( )~~ 50 ppm.

APPLICABILITY: All OPERATIONAL ~~CONDITIONS~~ MODE(S)

ACTION:

a. With one chlorine (and/or one ammonia) detection subsystem inoperable, restore the inoperable detection system to OPERABLE status within 7 days or, within the next 6 hours, initiate and maintain operation of at least one control room emergency filtration system subsystem in the (isolation) mode of operation.

1. b. With ~~both chlorine (and/or ammonia) detection subsystems~~ inoperable, within one hour initiate and maintain operation of ~~at least one~~ control room ~~emergency filtration~~ ventilation system ~~subsystem~~ in the (isolation) mode of operation. the

~~c. The provisions of Specification 3.0.4 are not applicable.~~

The TOXIC gas monitoring system

4.3 SURVEILLANCE REQUIREMENTS

~~4.3.7.8~~ ~~Each of the above required chlorine (and ammonia) detection system subsystems~~ shall be demonstrated OPERABLE by performance of a:

a. CHANNEL CHECK at least once per 12 hours,
b. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
c. CHANNEL CALIBRATION at least once per 18 months.

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