ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Contents of the Sequoyah Nuclear Plant, Units 1 and 2, Improved Technical Specifications (ITS) Submittal

Contents

CONTENTS OF THE SEQUOYAH NUCLEAR PLANT IMPROVED TECHNICAL SPECIFICATIONS (ITS) SUBMITTAL

Enclosure 2 of the submittal for the conversion of the current Technical Specifications (CTS) to the ITS for Sequoyah Nuclear Plant consists of the following sixteen volumes:

Volume Titles

1. Application of Selection Criteria to the Sequoyah Nuclear Plant Technical Specifications
2. Generic Determination of No Significant Hazards Considerations and Environmental Assessment
3. ITS Chapter 1.0, Use and Application
4. ITS Chapter 2.0, Safety Limits
5. ITS Section 3.0, Limiting Condition for Operation (LCO) Applicability and Surveillance Requirement (SR) Applicability
6. ITS Section 3.1, Reactivity Control Systems
7. ITS Section 3.2, Power Distribution Limits
8. ITS Section 3.3, Instrumentation
9. ITS Section 3.4, Reactor Coolant System
10. ITS Section 3.5, Emergency Core Cooling Systems (ECCS)
11. ITS Section 3.6, Containment Systems
12. ITS Section 3.7, Plant Systems
13. ITS Section 3.8, Electrical Power Systems
14. ITS Section 3.9, Refueling Operations
15. ITS Chapter 4.0, Design Features
16. ITS Chapter 5.0, Administrative Controls

Volume 1 is provided to assist the Nuclear Regulatory Commission (NRC) in the review and approval of Volumes 2 through 16. Below is a brief description of the content of each of the volumes in this submittal.

Volume 1

Volume 1 provides details concerning the application of the selection criteria to the individual Sequoyah Nuclear Plant CTS. Each CTS Specification is evaluated, and a determination is made as to whether or not the CTS Specification meets the criteria in 10 CFR 50.36(c)(2)(ii) for retention in the proposed ITS.

Volume 2

Volume 2 contains the majority of the evaluations required by 10 CFR 50.91(a), which support a finding of No Significant Hazards Consideration (NSHC). Based on the inherent similarities in the NSHC evaluations, generic evaluations for a finding of NSHC have been written for the following categories of CTS changes:

- Administrative Changes
- More Restrictive Changes
- Relocated Specifications

- Removed Detail Changes
- Less Restrictive Changes - Category 1 - Relaxation of LCO Requirements
- Less Restrictive Changes - Category 2 - Relaxation of Applicability
- Less Restrictive Changes - Category 3 - Relaxation of Completion Time
- Less Restrictive Changes - Category 4 - Relaxation of Required Action
- Less Restrictive Changes - Category 5 - Deletion of Surveillance Requirement
- Less Restrictive Changes - Category 6 - Relaxation of Surveillance Requirement Acceptance Criteria
- Less Restrictive Changes - Category 7 - Relaxation of Surveillance Frequency
- Less Restrictive Changes - Category 8 - Deletion of Surveillance Requirement Shutdown Performance Requirements
- Less Restrictive Changes - Category 9 - Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports

For those less restrictive changes that do not fall into one of the generic Less Restrictive Changes categories, specific NSHC evaluations have been performed and are provided in the applicable Chapter, Section, or Specification in Volumes 3 through 16.

In addition, Volume 2 contains an evaluation of environmental consideration in accordance with 10 CFR 51.21. It has been determined that the proposed license amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(b), and no environmental impact statement or environmental assessment need be prepared in connection with the proposed license amendment.

Volumes 3 through 16

Volumes 3 through 16 provide the details and justification to support the proposed changes. Each volume corresponds to a Chapter, Section, or Specification of NUREG-1431, Revision 4.0. Each volume contains the required information to review the conversion to ITS, and include the following:

- Individual ITS Specifications in:
  - ITS Chapter (Volumes 3, 4, and 15);
  - Section (Volume 5); or
  - Specification (Volumes 6 through 14 and 16) order.
- Relocated/Deleted CTS Specifications (if applicable); and
- ISTS Specifications not adopted in the Sequoyah Nuclear Plant ITS (if applicable).

The information for each of the above three types of specifications is organized as follows:

<u>CTS Markup and Discussion of Changes (DOCs)</u> (applicable only to Individual ITS Specifications and Relocated/Deleted CTS Specifications)

This section contains a markup of the CTS pages, either for CTS pages associated with an Individual ITS Specification or for Relocated/Deleted CTS Specifications, and the DOCs from the CTS. CTS license amendment requests under NRC review that have been docketed as of August 10, 2012 have been incorporated in the proposed changes as described in Enclosure 6 of this submittal.

The CTS markup pages for each ITS Specification are normally in numerical order.

However, more than one CTS Specification is sometimes used in the generation of an ITS Specification. In this case, the CTS pages that are the major contributor to the ITS Specification are shown first, followed by the remaining associated CTS pages in numerical order.

The left-hand margin of the CTS markup pages includes a cross-reference to the equivalent ITS requirement. The upper right-hand comer of the CTS markup pages is annotated with the ITS Specification number to which it applies. Items on the CTS markup pages that are addressed in other proposed ITS Chapters, Sections, or Specifications are annotated with a reference to the appropriate ITS Chapter, Section, or Specification.

The CTS markup pages are annotated with an alphanumeric designator to identify the differences between the CTS and the proposed ITS. The designator corresponds to a DOC, which provides the description and justification of the change. The DOCs are located directly following the associated CTS markup for each Chapter or Section (Volumes 3, 4, 5, and 15) or each Specification (Volumes 6 through 14 and 16).

Each proposed change to the CTS is classified into one of the following categories:

Designator Category

Designator	**Category**
A	ADMINISTRATIVE CHANGES - Changes to the CTS that do not result in new requirements or change operational restrictions or flexibility. These changes are supported in aggregate by a single generic NSHC.
M	MORE RESTRICTIVE CHANGES - Changes to the CTS that result in added restrictions or reduced flexibility. These changes are supported in aggregate by a single generic NSHC.
R	RELOCATED SPECIFICATIONS - Changes to the CTS that relocate specifications that do not meet the selection criteria of 10 CFR 50.36(c)(2)(ii). These changes are supported in aggregate by a single generic NSHC.

LA REMOVED DETAIL CHANGES - Changes to the CTS that eliminate detail and relocate the detail to a licensee-controlled document. Typically, this involves details of system design and function, or procedural detail on methods of conducting a Surveillance Requirement. These changes are supported in aggregate by a single generic NSHC. In addition, the generic type of removed detail change is identified in italics at the beginning of the DOC.

L LESS RESTRICTIVE CHANGES - Changes to the CTS that result in reduced restrictions or added flexibility. These changes are supported either in aggregate by a generic NSHC that addresses a particular category of less restrictive change, or by a specific NSHC if the change does not fall into one of the nine categories of less restrictive changes. If the less restrictive change is covered by a generic NSHC, the category of the change is identified in italics at the beginning of the DOC.

The DOCs are numbered sequentially within each letter designator for each ITS Chapter, Section, or Specification.

The CTS Bases pages are replaced in their entirety by the proposed Sequoyah Nuclear Plant ITS Bases, and markup pages are not provided in the ITS submittal.

ISTS Markup and Justification for Deviations (JFDs) (applicable only to Individual ITS Specifications and ISTS Specifications not adopted in the Sequoyah Nuclear Plant ITS)

This section contains a markup of the NUREG-1431, Revision 4.0, ISTS pages, either for ISTS pages associated with an Individual ITS Specification or ISTS Specifications not adopted in the Sequoyah Nuclear Plant ITS, and JFDs from the ISTS. The ISTS pages are annotated with a numeric designator to identify the differences between the ISTS and the proposed ITS. The designator corresponds to a JFD, which provides the justification for the difference. The JFDs are located directly following the associated ISTS markup for each Chapter or Section (Volumes 3, 4, 5, and 15) or each Specification (Volumes 6 through 14 and 16). The ISTS markup pages are also annotated to show the incorporation of NRC approved generic changes (Technical Specification Task Force (TSTF) change travelers) that are applicable to the Sequoyah Nuclear Plant ITS.

The left-hand margin of the ISTS markup pages includes a cross-reference to the equivalent CTS requirement.

ISTS Bases Markup and JFDs (applicable only to Individual ITS Specifications and ISTS Specifications not adopted in the Sequoyah Nuclear Plant ITS)

This section contains a markup of the NUREG-1431, Revision 4.0, ISTS Bases pages, either for ISTS Bases pages associated with an Individual ITS Specification or ISTS Specifications not adopted in the Sequoyah Nuclear Plant, and JFDs from the ISTS Bases. The ISTS Bases pages are annotated with a numeric designator to identify the differences between the ISTS Bases and the proposed ITS Bases. The designator corresponds to a JFD, which provides the justification for the difference. The JFDs are located directly following the associated ISTS Bases markup for each Chapter or Section (Volumes 3, 4, 5, and 15) or each Specification (Volumes 6 through 14

and 16). The ISTS Bases markup pages are also annotated to show the incorporation of NRC-approved generic changes (TSTF change travelers) that are applicable to the Sequoyah Nuclear Plant ITS Bases. The volumes for ITS Chapters 1.0, 4.0, and 5.0 do not include this section, because NUREG-1431, Revision 4.0, does not include any Bases for these Chapters.

Determination of NSHC (applicable only to Individual ITS Specifications and Relocated/Deleted CTS Specifications)

This section contains the determination in accordance with 10 CFR 50.91(a)(1) using the criteria of 10 CFR 50.92(c) to support a finding of NSHC. For those changes covered by a generic NSHC, those generic NSHCs are located in Volume 2. For those less restrictive changes that do not fall into one of the generic less restrictive categories, a specific NSHC evaluation has been performed. Each evaluation is annotated to correspond to the DOC discussed in the NSHC. For those ITS Chapters, Sections, or Specifications for which the less restrictive DOCs all fall into a generic category, a statement that there are no specific NSHCs is provided.

ENCLOSURE 3

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Licensee Identified Changes That May Require a Formal Technical Branch Review

LICENSEE IDENTIFIED CHANGES THAT MAY REQUIRE A FORMAL TECHNICAL BRANCH REVIEW

As discussed in LIC-601, changes that may require a formal Technical Branch review are those changes included in the Improved Technical Specifications (ITS) conversion submittal that do not maintain the Current Technical Specifications (CTS) and are not the result of adopting the Improved Standard Technical Specifications (ISTS) as described in NUREG-1431, Rev. 4.0. The following is a list of changes in Enclosure 2 that may require a formal Technical Branch Review in the SQN ITS conversion submittal, but do not involve a design change to the plant:

1. CTS 4.2.2.1 states that the provisions of Specification 4.0.4 are not applicable, and thereby provides an allowance for entering the next higher MODE of Applicability when the Surveillance is not met. CTS 4.2.2.2.d.1 Note *** states that during power escalation at the beginning of each cycle, power level may be increased until a power level for extended operation has been achieved and power distribution map obtained. ITS 3.2.1 has a similar note for the beginning of each cycle, however, there is no specific allowance for changing MODES at any other time with ITS LCO 3.2.1 not met. ITS LCO 3.0.4 requires, in part, that when an LCO is not met, entry into a MODE or other specified condition in the applicability shall only be made: If part a. or part b. or part c. is met. Part c allows, when an allowance is stated in the individual value, parameter or other specification. ITS 3.2.1 Surveillance Requirements Note will provide an allowance whereby, Surveillance performance is not required until 12 hours after an equilibrium power level has been achieved, at which a power distribution map can be obtained. (Refer to Enclosure 2, Volume 7, ITS Section 3.2.1, Discussion of Change (DOC) M04.)

2. CTS Table 3.3-1 requires Functional Unit 14.C (Main Steam Generator Water Level – Low-Low, RCS Loop ΔT) to be OPERABLE in MODES 1 and 2. If one channel is inoperable, the CTS Table 3.3-1 Actions require that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP. ITS 3.3.1 Required Action T.2 allows an alternative of placing the Steam Generator Water Level – Low-Low channel in trip instead of adjusting the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP with the same Completion Time. Similarly, CTS Table 3.3-1 requires Functional Unit 14.D (Main Steam Generator Water Level – Low-Low, Containment Pressure (EAM)) to be OPERABLE in MODES 1 and 2. If one channel is inoperable, the CTS Table 3.3-1 Actions require that within 6 hours, for the affected protection set, the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse). ITS 3.3.1 Required Action S.2 allows an alternative of placing the Steam Generator Water Level – Low-Low channel in trip instead of adjusting the Steam Generator Water Level – Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level – Low-Low (Adverse) with the same Completion Time for placing the channel in trip. Once either of these Functional Unit channels are placed in the tripped condition, the applicable circuitry is removed from the active portion of the Steam Generator Low-Low Level channel. The action of tripping the channel provides the protection set's input to the 2/3 logic gates. (Refer to Enclosure 2, Volume 8, ITS 3.3.1, DOCs L11 and L12.)

3. CTS Table 4.3-1, in part, requires the performance of a FUNCTIONAL TEST for Functional Unit 6 (Source Range, Neutron Flux) in MODES 2, 3, 4, 5, and with the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. When in the required MODES, the FUNCTIONAL TEST is required to be performed on a monthly basis (M) and prior to startup (S/U) if not performed in the previous 31 days. ITS Table 3.3.1-1 requires a CHANNEL OPERATIONAL TEST (COT) (SR 3.3.1.7) for Function 5 (Source Range Neutron Flux) in MODE 2 below the P-6 interlocks; and MODES 3, 4, and 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. ITS SR 3.3.1.7 is modified by a Note stating, "Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 24 hours after entry into MODE 3." The addition of the Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the reactor trip breakers are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the reactor trip breakers closed for greater than 24 hours this Surveillance must be performed prior to 24 hours after entry into MODE 3. (Refer to Enclosure 2, Volume 8, ITS 3.3.1, DOC L20.)

4. CTS Table 2.2-1 for Functional Unit 16 (Underfrequency – Reactor Coolant Pumps [RCPs]) lists the Nominal Trip Setpoint as 56.0 Hz – each bus, and the Allowable Value as ≥ 55.9 Hz – each bus. ITS Table 3.3.1-1 for Function 12 (Underfrequency RCPs) lists the Nominal Trip Setpoint as 57.0 Hz and the Allowable Value as ≥ 56.3 Hz. The Underfrequency RCP reactor trip ensures that protection is provided against violating the Departure from Nucleate Boiling Ratio (DNBR) limit due to a loss of flow in two or more Reactor Coolant System (RCS) loops from a major network frequency disturbance. TVA has determined that to provide adequate protection changes to the Underfrequency RCP Nominal Trip Setpoint and the Allowable Value are needed. This change was previously proposed in SQN license amendment request TVA-SQN-TS-02-01, Revision 1 (ADAMS Accession No. 042430467) but later withdrawn in TVA-SQN-TS-02-01, Revision 2 (ADAMS Accession No. ML061990303) pending resolution of issues with TSTF-493. In Revision 2, TVA stated that a new TS amendment request would be submitted to the NRC once TSTF-493 receives NRC approval. As TSTF-493 has been approved by the NRC and is being adopted under this ITS Conversion submittal, TVA is proposing to change the setpoints to those proposed in the previous submittal. (Refer to Enclosure 2, Volume 8, ITS 3.3.1 DOC M24.)

5. CTS Table 3.3-3 requires Functional Units 6.c.i.c (Auxiliary Feedwater, Main Steam Generator Water Level – Low-Low, Start Motor Driven Pumps, RCS Loop ΔT) and 6.c.ii.c (Auxiliary Feedwater, Main Steam Generator Water Level – Low-Low, Start Turbine Driven Pumps, RCS Loop ΔT) to be OPERABLE in MODES 1, 2, and 3. If one channel is inoperable, the CTS Table 3.3-3 Actions require that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% Rated Thermal Power (RTP). ITS 3.3.2 Required Action K.2 allows an alternative of placing the Steam Generator Water Level – Low-Low channel in trip instead of adjusting the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP with the same Completion Time. Similarly, CTS Table 3.3-3 requires Functional Unit 6.c.i.d (Auxiliary Feedwater, Main Steam Generator Water Level – Low-Low, Start Motor Driven Pumps, Containment Pressure (EAM)) and 6.c.ii.d (Auxiliary Feedwater, Main Steam Generator Water Level – Low-Low, Start Turbine Driven Pumps,

Containment Pressure (EAM)) to be OPERABLE in MODES 1, 2, and 3. If one channel is inoperable, the CTS Table 3.3-3 Actions require that within 6 hours, for the affected protection set, the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse). ITS 3.3.2 Required Action J.2 allows an alternative of placing the Steam Generator Water Level – Low-Low channel in trip instead of adjusting the Steam Generator Water Level – Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level – Low-Low (Adverse) with the same Completion Time for placing the channel in trip. Once either of these Functional Unit channels are placed in the tripped condition, the applicable circuitry is removed from the active portion of the Steam Generator Low-Low Level channel. The action of tripping the channel provides the protection set's input to the 2/3 logic gates. (Refer to Enclosure 2, Volume 8, ITS 3.3.2, DOCs L12 and L13.)

6. CTS 4.3.2.1.3 requires, in part, an Engineered Safety Feature (ESF) RESPONSE TIME test of the Containment Ventilation Isolation High Radiation Function. ITS SR 3.3.6.8 requires, in part, an ESF RESPONSE TIME test of the Containment Ventilation Isolation High Radiation Function, and is modified by a Note that states the radiation detectors are excluded from response time testing. SQN License Amendment 190 and 182, for Unit 1 and Unit 2 respectively, relocated the Engineered Safety Feature Actuation System (ESFAS) response time limits to the UFSAR (ADAMS Accession No. ML013300393). UFSAR Table 7.3.1-4 contains these limits listing the information in two columns, "Initiating Signal and Function," and "Response Time in Seconds." The Initiating Signals listed in UFSAR Table 7.3.1-4 includes Containment Purge Air Exhaust Radioactivity – High for Function Containment Ventilation Isolation. The Response Time column in UFSAR Table 7.3.1-4 for Containment Ventilation Isolation is modified by Note (6). UFSAR Table 7.3.1-4 Note (6) states that the radiation detectors for Containment Ventilation Isolation Function may be excluded from Response Time Testing. This Note previously modified the CTS definition of an ESF RESPONSE TIME test when it was located within the CTS. This exclusion was removed when the ESFAS response time limits were relocated to the UFSAR by License Amendments 190 and 182. (Refer to Enclosure 2, Volume 8, ITS Section 3.3.6, DOC L01.)

7. CTS Table 4.3-1, in part, requires a FUNCTIONAL TEST for Functional Unit 6.B (Source Range, Neutron Flux, Shutdown) in MODES 2, 3, 4, 5, and with the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. When in the required MODES, the FUNCTIONAL TEST is required to be performed on a monthly basis (M) and prior to startup (S/U) if not performed in the previous 31 days. ITS SR 3.3.9.2 requires a CHANNEL OPERATIONAL TEST (COT) for the required Boron Dilution Monitoring Instrumentation (Source Range Neutron Flux Monitoring Channel) in MODE 3, 4, and 5. ITS SR 3.3.9.2 is modified by a note stating, "Not required to be performed prior to entering MODE 3 from MODE 2 until 24 hours after entry into MODE 3." The addition of the Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 and prevents entry into Required Actions. (Refer to Enclosure 2, Volume 8, ITS Section 3.3.9, DOC L04.)

8. CTS 3.4.1.3.a and CTS 3.4.1.4.a require, in part, RCS loops to be OPERABLE in MODES 4 and 5, respectively. Each required RCS loop is required to be accompanied by its associated steam generator and reactor coolant pump. The

OPERABILITY of required steam generators is determined by verifying the secondary side water level to be greater than or equal to 10 percent (wide range indication). ITS SR 3.4.6.2 and ITS 3.4.7.2 require verification that each required steam generator has a secondary side water level ≥ 21% (narrow range indication). The purpose of these Specifications is to ensure adequate means of decay heat removal and boron mixing. When a reactor coolant loop is used to meet the requirement, the associated steam generator OPERABILITY is required to be determined by verifying the secondary side water level is high enough to ensure the steam generator tubes are not uncovered, thereby providing the heat sink necessary for decay heat removal. A secondary side steam generator water level of 21% (narrow range indication) will ensure at least 76 inches of water above the top of the steam generators tubes in MODES 4 and 5. (Refer to Enclosure 2, Volume 9, ITS Section 3.4.6, DOC M04; and ITS Section 3.4.7, DOC M01.)

9. CTS 3.4.6.3 does not provide an LCO or ACTIONS to take when the Residual Heat Removal (RHR) System interlock function is inoperable and does not contain an explicit Surveillance Requirement to verify the RHR System interlock prevents valves from being opened to prevent exceeding RHR design pressure. ITS LCO 3.4.14, second part, has been added to ensure consistency between the LCO, ACTIONS, and Surveillance Requirements. ITS 3.4.14 ACTION C requires with an inoperable RHR System interlock function that the affected penetration is isolated by use of one closed manual or deactivated valve within 4 hours. ITS SR 3.4.14.2 verifies the RHR System interlock will prevent the valves from being opened with RCS pressure signal ≥ 380 psig. The addition of the LCO, ACTIONS and Surveillance Requirement will ensure the OPERABILITY of the RHR System interlock function to prevent the failure of the low pressure portion of the RHR System. (Refer to Enclosure 2, Volume 9, ITS Section 3.4.14, DOC M01.)

10. CTS 3.5.2 requires two Emergency Core Cooling System (ECCS) trains to be OPERABLE. CTS 3.5.2 Note 1 states, in MODE 3, both Safety Injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform Pressure Isolation Valve (PIV) testing per SR 4.4.6.3. ITS 3.5.2 requires two ECCS trains to be OPERABLE. ITS 3.5.2 Note 1 states, in MODE 3, both ECCS pump flow paths may be isolated for 2 hours to perform PIV testing per SR 3.4.14.1. Surveillance testing of the PIVs requires the SI Pump and RHR Pump flow paths to be isolated. CTS 3.5.2 Note 1 allows both SI pump flow paths to be isolated for two hours provided that the flow paths are readily restorable from the control room. In addition to isolating the SI pump flow paths, ITS 3.5.2 Note 1 will allow both RHR pump flow paths to be isolated for two hours allowing for the required testing of the PIVs. This change permits the isolation of the ECCS (SI pump and RHR pump) flow paths provided that the flow paths are readily restorable from the control room. (Refer to Enclosure 2, Volume 10, ITS Section 3.5.2, DOC L01.)

11. CTS 3.6.5.3, Action b. allows continued unit power operation for up to 14 days with one of more ice condenser doors open or inoperable for reasons other than the door is physically restrained from opening, provided the ice bed temperature is verified to not exceed 27°F every 4 hours. Otherwise, the ice condenser door shall be restored to its closed position or OPERABLE status within 48 hours (as applicable), or the unit shall be in hot standby within 6 hours and cold shutdown in 36 hours. ITS 3.6.13, Condition B is entered when one of more ice condenser

doors are open or inoperable for reasons other than the door is physically restrained from opening. In this Condition, ice bed temperature is verified to not exceed 27°F once per 4 hours, and the inoperable ice condenser door(s) is required to be in the closed position and restored to an OPERABLE status within 14 days. If the inoperable or open ice condenser door is not closed and restored to an OPERABLE status within 14 days, the unit shall be in MODE 3 in 6 hours and MODE 5 in 36 hours. If ice bed temperature exceeds 27°F, Required Action C.1 requires entry into the applicable Conditions and Required Actions of LCO 3.6.12, "Ice Bed." This change removes the 48 hour allowance to restore or close the ice condenser door after the 14 day allowed outage time has expired. (Refer to Enclosure 2, Volume 11, ITS Section 3.6.13, DOC M01.)

12. CTS 3.6.5.3 provides specific Actions to be taken if an ice condenser intermediate deck or top deck door is open or inoperable. ITS 3.6.13 ACTIONS Note 2 states that when an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required. The doors must be OPERABLE to ensure the proper opening of the ice condenser in the event of a Design Basis Accident (DBA). OPERABILITY includes being free of any obstructions that would limit their opening. Surveillances and preventative maintenance are performed on the doors to improve reliability of the doors or to ensure the doors do not become inoperable. During this short duration, the ice bed temperature is normally continuously monitored to ensure that an ice bed temperature change due to an open door will be detected and appropriate actions taken. Additionally, the doors may be walked upon or opened for inspections. The number of doors walked on simultaneously (and therefore, potentially incapable of opening) is small when compared to the total number of doors. (Refer to Enclosure 2, Volume 11, ITS Section 3.6.13, DOC L02.)

13. The SQN Updated Final Safety Analysis Report (UFSAR) accident analysis describes the use of Atmospheric Relief Valves (ARVs) in the mitigation of a Steam Generator Tube Rupture event concurrent with a loss of offsite power. The accident analysis assumes the steam generator ARVs associated with the unaffected steam generators are available to cool down the RCS and terminate the primary to secondary leak. ISTS 3.7.4 ACTION A requires the restoration of the required ADV line to OPERABLE status in 7 days when one required ADV line is inoperable. ISTS 3.7.4 ACTION B requires the restoration of all but one ADV lines to OPERABLE status in 24 hours when two or more ADV lines are inoperable. The 24 hour Completion Time is commensurate with a loss of safety function while providing some time to effect repair and considering the low probability of an event occurring during the time that would require the ADV lines. ITS 3.7.4 ACTION A requires the restoration of the affected ARV lines to OPERABLE status within 72 hours when one or more ARV line(s) are inoperable due to one train of Auxiliary Control Air System (ACAS) being nonfunctional. ITS 3.7.4 ACTION B requires restoration of all ARV lines to OPERABLE status within 24 hours when one or more ARV lines are inoperable for reasons other than Conditon A. The ACAS system supplies essential air to the ARVs on loss of offsite power. The ACAS system consists of two trains. Train A supplies essential air to steam generator 1 and 3 ARVs and train B supplies essential air to steam generator 2 and 4 ARVs. On a loss of one train of essential air to the ARVs, alternate means are available to

operate the affected ARVs via a manual loading station and relief handwheels. The use of the alternate means for operating the ARVs allows the ARVs to be operated in the mitigation of a steam generator tube rupture event concurrent with a loss of offsite power. (Refer to Enclosure 2, Volume 12, ITS Section 3.7.4, Justification for Deviation (JFD) 4.)

14. ITS SR 3.7.10.1 requires verification that each tornado damper is in the correct position every 31 days unless they are locked, sealed, or otherwise secured in place. CTS 3.7.7 does not contain this Surveillance Requirement. This changes the CTS by requiring a verification that each tornado damper is in the correct position. The Control Room Emergency Ventilation System (CREVS) is designed to ensure that the control room environment will support the activities required of control room personnel during accident conditions and the subsequent recovery period. When activated, CREVS provides a mixture of outside air and recirculated air through devices that provide temperature, humidity, and air cleanup control. In this mode, the control room is maintained at a positive pressure (0.125 inches water gauge) above the outside atmospheric pressure and at a slightly positive pressure in relation to the adjacent areas. When the tornado dampers are closed, the flow path for pressuring air to CREVS is isolated. Therefore, CREVS is unable to maintain a positive pressure above the outside atmospheric pressure and at a slightly positive pressure in relation to the adjacent areas. Since the position of the tornado dampers is integral to the OPERABILITY of CREVS, ITS 3.7.10 a specific Surveillance Requirement (ITS SR 3.7.10.1) has been added to verify every 31 days that the tornado dampers are in the correct position, unless the dampers are locked, sealed or otherwise secured. (Refer to Enclosure 2, Volume 12, ITS Section 3.7.10, DOC M01.)

15. CTS 3.8.1.1 provides Actions to limit the time the unit can remain operating with different combinations of inoperable offsite circuits and diesel generators (DGs). CTS 3.8.2.1 provides Actions to limit the time the unit can operate with one or more inoperable AC electrical boards, requiring restoration of inoperable listed AC electrical boards to an OPERABLE status within 8 hours regardless of the equipment to which it supplies power. The onsite Class 1E AC Electrical Distribution System supplies electrical power to two power trains shared between the two units. The core cooling and containment cooling system loads (e.g., Safety Injection (SI) pumps, Auxiliary Feedwater (AFW) pumps, Residual Heat Removal (RHR) pumps, Centrifugal Charging pumps, Containment Spray pumps, and Air Return System (ARS) fans) are unitized to the respective unit's 6.9 kV Shutdown Boards. However, some safety-related systems (e.g., Essential Raw Cooling Water (ERCW), Component Cooling (CCS), Emergency Gas Treatment (EGTS), Auxiliary Building Gas Treatment, (ABGTS), Control Room Emergency Ventilation (CREVs), and Control Room HVAC (CRACS)) are shared between the units. The AC sources for the shared loads are distributed across both unit's shutdown boards. Therefore, two qualified offsite circuits and four DGs capable of supplying the onsite Class 1E AC Electrical Distribution System are required to be OPERABLE. However, the impacts of an inoperable offsite power source or DG on an opposite unit's 6.9 kV Shutdown Board differ from the impacts of an inoperable offsite power source or DG on an associated unit's 6.9 kV Shutdown Board, due to the loads powered from the respective board. Therefore, the CTS is being changed to provide separate Actions to declare the required features powered from the opposite unit's Class 1E AC Electrical Power Distribution System inoperable as the

remedial measures for the inoperable AC sources. (Refer to Enclosure 2, Volume 13, ITS Section 3.8.1, DOC L01; and ITS Section 3.8.9, DOC L01.)

Although considered "in-scope," TVA has identified several changes which may require a formal Technical Branch review. The following is a listing of those changes:

1. TVA is incorporating TSTF-411, Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P). This affects multiple Instrumentation Section Specifications.

2. TVA is incorporating TSTF-418, RPS and ESFAS Test Times and Completion Times (WCAP-14333). This affects multiple Instrumentation Section Specifications.

3. TVA is incorporating TSTF-425, Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b. This affects multiple ITS Specifications.

4. TVA is incorporating TSTF-446, Rev. 3, Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791). (Refer to Enclosure 2, Volume 11, ITS 3.6.3 DOC L03.)

5. TVA is incorporating TSTF-490, Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec. This affects ITS 1.1, Definitions, and ITS 3.4.16, RCS Specific Activity.

6. TVA is incorporating TSTF-493, Clarify Application of Setpoint Methodology for LSSS Functions. This affects multiple Instrumentation Section Specifications.

7. TVA is incorporating TSTF-500, DC Electrical Rewrite - Update to TSTF-360. This affects the DC Electrical Specifications and the Battery Maintenance Monitoring Program in the Administrative Section.

ENCLOSURE 5

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791)

Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791)

1.0 Purpose

This analysis considers the Sequoyah (SQN) as-built, as-operated plant to ascertain acceptability of applying NRC endorsed topical report (TR) WCAP-15791-P-A Revision 2 "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times."

The benefit of this proposed change to the Technical Specifications is that completion time (CT) extensions will provide the operator flexibility by increasing the time to perform on-line CIV testing, maintenance or repair. Currently CIV completion time is limited to four-hours for all CIVs.

2.0 References and Acronyms

2.1 References

1. NUREG/CR-5496, "CCF Parameter Estimation 2007"
2. Regulatory Guide 1.174, Rev. 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"
3. Regulatory Guide 1.177, Rev. 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications"
4. Regulatory Guide 1.200, Rev. 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"
5. WCAP-15791-P-A, Rev. 2 "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times"
6. NRC Accession Number 10027058, Generic Issue (GI-199), "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," August 2010
7. MDN-000-000-2010-0200, Rev. 1 - SQN PRA – "Summary Notebook"
8. MDN-000-000-2010-0202, Rev. 1 - SQN PRA – "Data Analysis"
9. MDN-000-000-2010-0203, Rev. 1 - SQN PRA – "Internal Flooding Analysis"
10. MDN-000-000-2010-0208, Rev. 2 - SQN PRA – "Quantification Notebook"
11. 1-SI-SXV-000-201.0, Rev. 017 - Surveillance Instruction – "Full Stroking of Category ‘A’ and ‘B’ Valves During Operation"
12. N2-88-400, Rev. 15 System Description – "Containment Isolation"
13. MDQ-000088-2013-000072 Rev. 0 "Risk-Informed Evaluation of Extension to Containment Isolation Valve Completion Times"
14. LTR-RAM-II-11-010, "R.G. 1.200 PRA Peer Review Against the ASME/ANS PRA Standard Requirements for the Sequoyah Nuclear Plant Probabilistic Risk Assessment," March 2011

2.2 Acronyms

The following acronyms are used in this analysis:

AOT - Allowed Outage Time
AOV - Air Operated Valves
ASME - American Society of Mechanical Engineers
CAFTA - Computer Aided Fault Tree Analysis
CCF - Common Cause Failure
CDE - Cause Determination and Evaluation
CDF - Core Damage Frequency
CDF_{SEIS} - Core Damage Frequency due to Seismic Event
CDF_{SGTR} - Core Damage Frequency due to Steam Generator Tube Rupture
CDF_{T} - Total Core Damage Frequency (Internal & External Events)
CIV - Containment Isolation Valve
CKV - Check Valve
CRMP - Configuration Risk Management Program
CT - Completion Time
FTC - Fail-To-Close
ICCDP - Incremental Conditional Core Damage Probability
ICLERP - Incremental Conditional Large Early Release Probability
IPE - Individual Plant Examination
IPEEE - Individual Plant Examination of External Events
ISLOCA - Interfacing System Loss of Coolant Accident
LCO - Limiting Condition for Operation
LERF - Large Early Release Frequency
LLRT - Local Leak Rate Testing
MOV - Motor Operated Valves
MGL - Multiple Greek Letter
NRC - Nuclear Regulatory Commission
NRR - Nuclear Reactor Regulation
PB_{RANDOM} - Pipe Break - Random
PB_{SEIS} - Pipe Break - Seismic
PRA - Probabilistic Risk Assessment
PWROG - Pressurized Water Reactor Owner's Group
RCS - Reactor Coolant System
RG - Regulatory Guide
SE - Safety Evaluation
SG - Steam Generator
SGTR - Steam Generator Tube Rupture
SI - Surveillance Instruction
SOV - Solenoid Operated Valve
SQN - Sequoyah Nuclear Power Plant
SRP - Standard Review Plan
SRV - Safety Relief Valve
SSE - Safe Shutdown Earthquake
TR - Topical Report
TS - Technical Specifications
WCAP - Westinghouse Commercial Atomic Power
WOG - Westinghouse Owner's Group
XO - Spurious (Transfers) Open

3.0 Assumptions and Analysis Basis

1. Before maintenance or repair is started on a containment isolation valve (CIV), it is assumed the other CIVs within the penetration are verified by Operations to be in their proper position(s).[1]
2. It is assumed that manually operated vent or drain valves located between the CIVs are verified by Operations to be in their closed position similar to assumption 1, as well as other normally closed manually operated valves connected to the penetration.
3. Manually operated vent or drains valves, if opened for LLRT (Local Leak Rate Testing), etc., are assumed to have a completion time based on the most restrictive CIV for the penetration. This is because the vent/drain lines are less than or equal to the CIV diameter, therefore, their CT is bounded by the larger valves in the associated penetration.
4. It is assumed that containment isolation valves that are locked closed have been verified closed (and locked to prevent inadvertent opening) by operations and therefore excluded from the analysis as potential to spuriously transfer open.
5. For this analysis, it is conservatively assumed that valves that are periodically opened/closed (e.g., containment purge valves) are normally opened.
6. If a seismic event greater than a SSE (Safe-Shutdown Earthquake) were to occur, it is assumed that all non-seismically qualified piping will fail, i.e., a probability of 1.0 is given. Sections of pipe between the containment isolation valve and the containment wall which is part of the break exclusion zone are excluded.[2]
7. Containment isolation valves are tested quarterly [Ref 11], additionally it is assumed there is one miscellaneous CIV actuation per year making a total of five actuations per year.[3]
8. Regardless of the completion time (CT) it is conservatively assumed the maintenance activity requires the entire length of the CT and is completed within that time.
9. For penetration configurations that have an "extra valve" i.e., not a CIV; the probability assigned for those non-CIV valves being in maintenance remains constant for all CTs. These valves are mainly recognized in the Reactor Coolant System (RCS) penetrations.[4] The assumption is that the CT on all non-CIV valves modeled in this analysis is 72 hours.
10. Only one valve within a single containment penetration can be in maintenance at a time.
11. Maintenance on a valve can be conducted in one of two ways:
    a) the valve is intact and capable of maintaining its pressure boundary function, or
    b) the valve is not intact and is not capable of maintaining its pressure boundary function.
12. When there are two or more valves of the same valve type in the same position (opened or closed) within a penetration, common cause failures (CCF) are included in the ICLERP and ΔLERF calculations.[5]

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1 This assumption eliminates the need to include the probability that the operable valves were mispositioned or transferred to the wrong position since they were last checked. This approach is consistent with WCAP-15791.

2 The piping in the break exclusion zone is more robust that the piping outside the zone. Therefore, consistent with the approach taken in WCAP 15791 it is assumed that the probability of this piping failing randomly or due to a seismic event is much lower than the piping outside the exclusion zone and is of no consequence to this analysis.

3 Same approach as taken in the WCAP.

4 The extra valve(s) provides an additional capability for the operator to isolate a penetration.

5 For cases whereby one CIV is out-of-service for repair, the second CIV of the same valve type has a dependent failure probability involving the common-cause beta factor. For cases where there are three CIVs of the same type, the dependent failure probability involves the gamma factor. The Multiple Greek Letter (MGL) common- cause methodology is used in this analysis. Note - different valve manufacturers is irrelevant to this analysis.

13. It is assumed that interfacing system LOCAs (ISLOCAs) result in core damage.
14. Similar to the Lead Plant, SQN does not have a full scope PRA; therefore, the internal and external at-power CDF is conservatively assumed to be <1.0E-4/yr. This value represents the upper bound for the total-at-power internal and external events CDF based on the acceptance guidelines in Regulatory Guide 1.174, Section 2.2.4, that indicates the plant total CDF should be less than 1.0E-04/yr if changes to a plant's licensing bases are made that can result in a small increase in plant risk.
15. For all standby systems connected to the reactor coolant system (RCS):
    - the system is considered "closed" inside containment and not actively connected to the RCS if there is a closed valve between the RCS and the inside containment CIV.
    - the system is considered "closed" outside of containment if there is an extra closed valve before the outside containment CIV, and if the piping from the RCS and the extra closed valve outside containment is qualified for high RCS pressures.
16. For systems whereby closed both inside and outside containment, the probability of a non-seismic and/or ISLOCA CDF release is extremely small and therefore excluded from the analysis due to the large number of normally closed valves available to isolate the penetration. Additionally, the likelihood of a random pipe break occurring inside and outside containment simultaneously, causing both systems inside and outside of containment to open is very small and also excluded from the analysis. Note - ALL piping between the RCS and the extra closed valve outside of containment must be qualified for high RCS pressures.
17. For RCS connections, during seismic and random pipe breaks, it is assumed that the piping fails between the CIV and the extra valve. The portion of piping between the CIV and the containment wall is part of the break exclusion zone, and therefore is assumed to remain intact while non-qualified pipe is assumed to fail. This eliminates crediting the extra valves to isolate the penetration.
18. Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of the plant charging systems, and therefore, are not considered small LOCAs or potential containment bypass pathways.
19. For all RCS connections, in which there are two valves of the same type (usually check valves), in series inside containment, before the RCS, common cause failure does not apply because the valves are operating under different conditions. The valve closer to the RCS is subject to a higher pressure than the downstream valve.
20. For the probability of an ISLOCA release portion of the ΔLERF calculations, when there is a normally open valve in the penetration, the open valve is not credited in the calculation. When assessing ISLOCA, the initiating event is the frequency of the closed valves within the path of release spuriously transferring open or rupturing, thus creating a flow path directly from the RCS to the outside atmosphere.
21. For all RCS connections that are normally operating, the probability of an ISLCOA release is not considered because the valves are already open and flow is occurring.

4.0 Regulatory Acceptability and Discussion

4.1 Regulatory Acceptability

The Office of Nuclear Reactor Regulation (NRR) issued a safety evaluation (SE) on WCAP-15791-P, Revision 2. The SE considers Technical Specification (TS) Limiting Conditions for Operation (LCO) that state the primary containment isolation valves (CIVs) must be operable for a given reactor mode of operation.

The SE concluded:

1. The TR (topical report) provides guidance including generic and plant-specific analyses to assist licensees in evaluating changes to CIV completions times (CTs).

2. The guidance is complementary to NRC Staff guidance provided in -

    - Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" [Ref. 2]
    - Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications" [Ref.3]

Therefore, NRR stated the TR provides an acceptable basis to evaluate the proposed CIV CTs when used in conjunction with the RGs. Furthermore, with respect to the acceptance criteria associated with RG 1.177, the TR addresses Tiers 1 (Probabilistic Risk Assessment Capability and Insights) and 2 (Avoidance of Risk-Significant Plant Configurations). Tier 3 (Risk-Informed Configuration Risk Management) is not addressed by the TR and must be addressed in the plant-specific application.

4.2 Discussion

The TR provides a risk-informed justification for extending CIV CTs from 4-hours up to 168-hours for Westinghouse pressurized water reactors. For CIVs that do not demonstrate acceptable results for 168 hours, shorter CTs were evaluated in the report. A deterministic approach was used to determine the minimum containment hole size that would result in a large release from the containment atmosphere. These flow-paths are automatically given the 168-hours CT. All other penetrations were evaluated in the report using a PRA evaluation to verify what CT (i.e., less than 168-hours) is justified.

4.3 Regulatory Criteria

4.3.1 Standard Review Plan (SRP) 19.2

In accordance with SRP 19.2 a risk-informed application should be evaluated to ensure that the proposed changes meet the following key principles:

1. The proposed change meets current regulations, unless it explicitly relates to a requested exemption or rule change.

2. The proposed change is consistent with the defense-in-depth philosophy.

3. The proposed change maintains sufficient safety margins.

4. When proposed changes increase risk (i.e., core damage frequency (CDF) or large early release frequency (LERF)), the increase(s) should be small and consistent with the intent of the Commission’s Safety Goal Policy Statement.

5. The impact of the proposed change should be monitored using performance measurement strategies.

4.3.2 Regulatory Guide 1.177

RG 1.177 provides an approach for plant-specific, risk-informed decision making for changes to the technical specifications. A three-tiered approach for evaluation of the risk associated with the proposed TS change follows:

Tier 1 - an evaluation of the plant-specific risk associated with the proposed TS change, as shown by the change in:

- Change in the Core Damage Frequency (ΔCDF)
- Incremental Conditional Core Damage Probability (ICCDP)
- Change in Large Early Release Frequency (ΔLERF)
- Incremental Conditional Large Early Release Probability (ICLERP)

Tier 2 - identifies and evaluates, with respect to defense-in-depth, any potential risk-significant plant equipment outage configurations associated with the proposed change.

Tier 3 - provides for the establishment of an overall configuration risk management program (CRMP) and confirmation that its insights are incorporated into the decision making process before taking equipment out-of-service prior to or during the CT.

4.4 Generic Assessment (From WCAP-15791)

WCAP-15791, "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times" documents the generic analysis performed by Westinghouse for the PWR Owner's Group (PWROG). The generic assessment of impact on risk is documented in section 8 of the WCAP.

The penetration configurations used in the analysis were developed to be as generic as possible. Some of the configurations may not exist within all plants, and/or some of the maintenance situations may or may not be viable for all plants. For plant-specific implementation of the generic analysis, the expectation of the WCAP is that all utilities determine the applicability of the CT in practice.

In the generic analysis, Table 8-1 provides the list of input parameters. The majority of the inputs used were obtained from PRA data; however, to make the analysis as generic as possible, the most limiting (e.g., highest failure rate) values were chosen from a plant-to-plant comparison. The approach used both deterministic and probabilistic inputs. A deterministic approach was used to determine the minimum containment hole size (>2 inches) that will result in a large release from the containment atmosphere. All other penetrations are evaluated on a probabilistic basis to demonstrate if a CT of 7-days is acceptable or to determine an appropriate lesser CT.

4.5 Methodology

The lead Plant followed the generic analysis, as does the SQN specific analysis. The implementation procedure followed consisted of five steps. For penetration configurations whereby completion times were less than the maximum allowable value of 168-hrs, a plant specific analysis is performed. Not all SQN penetration configurations were addressed by the WCAP of which a plant specific analysis is performed.

4.5.1 Step 1 Containment Penetration Data Collection[6]

This data was provided to the PRA Engineer and documented in calculation MDQ-000088-2013-000072. [Ref. 13]

4.5.2 Step 2 Confirmation of Analysis Input Parameters

The generic analysis documented in WCAP-15791 used a set of input parameters that were obtained from industry PRA data. To make the analysis generic, the most limiting values were chosen. A review is performed to confirm that parameters used in the SQN PRA are bounded by the generic analysis inputs. For those that are not bounded the calculation is re-performed using the SQN parameter.

4.5.3 Step 3 Grouping

Penetrations are grouped based on whether it is an open or closed system and the following attributes:

- Connected to Containment Atmosphere (Class I)
- Connected to the Reactor Coolant System (Class II)
- Connected to the Steam Generators (Class III)

4.5.4 Step 4 Identification of Small Lines

Small lines is a characterization based on the size of a hole in the primary containment that is the threshold for accident condition radionuclide large release to the environment. Note that the "Small Lines" characterization is applicable only to those penetrations connected to the containment atmosphere, i.e., Class I.

4.5.5 Step 5 Generic Match

For those penetrations that did not screen from further consideration in step 4 (i.e., 168-hr CT), a comparison of the generic penetrations/flow paths listed in sections 8.2.2 through 8.2.4 of the WCAP is made.

4.5.6 Guidelines

The ICLERP and/or ΔLERF (depending on which is more limiting) was recalculated using SQN specific parameters for CIVs with CTs less than 168-hours. The inputs were used in the appropriate ICLERP and ΔLERF equation based on the penetration Class and Group. Similar to the lead plant (Wolf Creek) analysis, two guidelines are to be followed:

- For penetrations having one normally open CIV - when more than one valve type is present, use the CT for the normally open valve. All valves in the penetration will be represented by this valve type.

[6] Steps 1, 3 and 4 are documented in Calculation MDQ-000088-2013-000072. [Ref. 13]

- For penetrations that have more than one normally open CIV - use the CT for the normally open valve with the highest probability of failing-to-close. All valves in the penetration will be represented by this valve type.

4.6 SQN Inputs / Specific and Generic

4.6.1 Discussion

The analysis involved replacing generic parameters with SQN specific parameters or updated industry data, and recalculating the probabilistic evaluation. The reason for this analysis is to determine which CIVs could be justified for longer CT relaxations in addition to those justified under the generic analysis. The approach taken in the generic analysis was conservative, and therefore, applicable to all Westinghouse Owner's Group (WOG) plants, including SQN. Where appropriate, the plant-specific analysis removes over-conservatisms.

The SQN CIVs that were unable to meet the full 168 hour CT extension under the generic analysis are identified in calculation MDQ-000088-2013-000072 [Ref. 13]. The methodology, terminology, basis and assumptions that were applicable in the generic analysis are all applicable to the SQN specific analysis. The only difference is that the SQN input parameters were used in combination with generic parameters. The analyses in WCAP sections 8.2 and 8.3 were repeated using the SQN specific-parameters to calculate ICLERP and ΔLERF. For penetration configurations that differ from the WCAP, equations were developed. The purpose of this analysis is to determine CIVs that can be justified for longer completion time (CT) relaxations (>4-hrs <168-hrs) in addition to those justified under the generic analysis.

Total CDF

Similar to the Lead Plant, SQN does not have a full scope PRA; therefore, the internal and external at-power CDF is conservatively assumed to be 1.0E-4/yr. This value represents the upper bound for the total-at-power internal and external events CDF based on the acceptance guidelines in Regulatory Guide 1.174, Section 2.2.4, that indicates the plant total CDF should be less than 1.0E-04/yr if changes to a plant's licensing bases are made that can result in a small increase in plant risk.

Seismic

SQN does not have a seismic PRA; therefore, the results documented in Table D-1, "Seismic Core-Damage Frequencies Using 2008 USGS Seismic Hazard Curves" in Generic Issue-199, Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants" was used.[Ref 6] For SQN Units 1 & 2, the limiting frequency (5.1E-05/yr) was based on the Weakest Link Model using PGA (peak ground acceleration).

Containment Isolation Valve Treatment

For all normally-closed valves, the probability of the valve spuriously transferring open is considered. For all normally-open valves, the valves have the probability of a) failing-to-close, and b) spuriously transferring open after it has closed.

The limiting (bounding) valve in the SQN PRA for a spurious open or transfer open are the Safety Relief Valves. The SRVs provide for a steam release with a distribution rate of 2.12E-7/hr. Therefore, to determine the bounding probability that a valve will spuriously transfer open follows:

P_{topre} = 2.12E-07/hr * 4 hr CT = 8.48E-07
P_{to} = 2.12E-07/hr * 168 hrs CT = 3.56E-05

The SQN PRA does not explicitly model SOVs, therefore, SOV-FTC (9.54E-04) is used. Taken from NUREG/CR-6928.

The CIV corrective maintenance frequency (m) is derived from the highest valve failure rate used in this analysis (SOV FTC)[7] which is approximately 9.54E-04 per demand, meaning the component is expected to approximately fail every 1000 actuations [(1)/(9.54E-4) ~ 1000]. Each CIV is tested quarterly [Ref 6], and in addition it is assumed that there is one[8] miscellaneous CIV actuations per year. Therefore, giving a total of five CIV actuations per year. Dividing 1000 actuations by five actuations per year yields an approximate 200 year period per failure, or a corrective maintenance frequency of 0.005 per year. Therefore, the probability that a CIV is unavailable due to maintenance during a CT of 4 and 168 hours is calculated as follows:

Current CT 4 hrs	P_{m1} = [(4-hrs /8760-hrs/yr) * (0.005)] =	2.28E-06
Extra Valve Assumed CT 72-hrs	P_{mE} = [(72-hrs/8760-hr/yr)*(0.005)] =	4.11E-05
Extended CT 168 hrs	P_{m2} = [(168-hrs / 8760-hrs/yr) * (0.005)] =	9.59E-05

Containment Hole Size [Ref 5 Section 8.3]

Penetration flow paths connected to the containment atmosphere (this excludes RCS and SG connections) that have piping diameters smaller than a minimum value are an insufficient size to result in a large release. These penetrations automatically default to the 168-hour CT. Based on discussion with the NRC, the WOG applies a greater than 2-inch containment hole size for a large release.

4.6.2 Confirmation of Analysis Input Parameters

Table 4-1 Core Damage Frequencies

Input	Parameter	Generic Analysis	SQN-1	SQN-2
Total Core Damage Frequency/yr	CDF_T	1.00E-04	1.00E-04[Note 1]	1.00E-04[Note 1]
Core Damage Frequency Due to Seismic Event/yr	CDF_{SEIS}	4.41E-05	5.1E-05[Note 2]	5.1E-05[Note 2]

[7] For SOV CIVs the generic values from the WCAP are used. SRV - Water relief are also treated independently from the generic analysis.
[8] The Lead Plant analysis assumed only one additional actuation per year for a total of five. The SQN analysis applies the same assumption.

Table 4-1 Core Damage Frequencies

Input	Parameter	Generic Analysis	SQN-1	SQN-2
Core Damage Frequency/yr Due to Steam Generator Tube Rupture	CDF_{SGTR}	9.44E-06	1.75E-08[Ref 7 Tbl 6]	1.78E-08[Ref 7 Tbl 6]

Note 1: The SQN Internal Events + Internal Flooding Rev. 6 model quantifies a CDF of 1.59E-05 and 1.48E-05 [Ref 1] for Units 1 and 2, respectively. Similar to the generic analysis and lead plant analysis SQN does not have a full scope PRA; therefore, a generic value of 1.00E-04/yr is used in the analysis to represent the total CDF from internal and external events.

Note 2: The generic core damage frequency due to a seismic event (CDF_{SEIS}) per year was obtained from the results of GI-199. [Ref 6]

The seismic frequency used in the plant specific analysis is greater than that used in the generic analysis. Therefore, generic calculations that required the large release due to seismic CDF calculation are recalculated for SQN to ascertain the CT.

4.6.3 Valve Failure Probabilities, Pftc (Per Demand)

Table 4-2 - Valve Fail-To-Close and Fail-To-Reseat Probabilities

Valve Type	Failure Mode	Parameter	Generic Analysis	SQN[Note 1]
AOV[Note 2]	Fail-To-Close	$AOV_{ftc-aov}$	1.81E-02	5.76E-04
CKV	Fail-To-Close	$CKV_{ftc-ckv}$	3.44E-02	1.04E-04
MOV	Fail-To-Close	$MOV_{ftc-mov}$	1.09E-02	2.77E-04
SOV	Fail-To-Close	$SOV_{ftc-Sov}$	1.81E-02	9.54E-04
SRV - Steam[Note 3]	Fail-To-Reseat	$SRV_{ftc-srvs}$	2.50E-02	6.76E-05
SRV - Water	Fail-To-Reseat	$SRV_{ftc-srvw}$	2.50E-02	6.25E-02

As indicated in Table 4-2, the SQN inputs for valve failures (with exception of SRV-Water) are bounded by the generic analysis. Generic calculations that included water release SRVs are re-analyzed for the CT applicable to SQN.

Note 1: PRA model of Record, rev. 1, CAFTA .rr file. SOV-FTC (9.54E-04) is from NUREG/CR-6928 as SQN does not model this valve/mode in the PRA.

Note 2: AOVs are grouped into three categories, the most restrictive value is used for this analysis.

Note 3: SRVs are split into two categories, steam release (6.76E-05) and water release (6.25E-02). Table 8-1 from the WCAP [Ref 5] does not differentiate between water and steam. Judging from the value used in the generic analysis the steam and water relief SRVs may have been treated together.

4.6.4 Valve Failure Probabilities, Beta and Gamma Factors

Table 4-3 - Generic and SQN Specific Beta, Gamma Factors

Valve Type	Parameter	Generic Analysis (Valve fail-to-close, $beta_{ftc)}$	SQN [Note 1] (Valve fail-to-close, $beta_{ftc}$)
AOV	$beta_{ftc\text{-}aov}$	0.1	1.63E-02
CKV	$beta_{ftc\text{-}ckv}$	0.1	8.50E-03
MOV	$beta_{ftc\text{-}mov}$	0.088	1.54E-02
SOV	$beta_{ftc\text{-}sov}$	0.1	0.1 [Note 2]
SRV-Steam	$beta_{ftc\text{-}srvS}$	0.22	7.19E-02
SRV-Water	$beta_{ftc\text{-}srvW}$	0.22	0.22 [Note 2]
all valve types	Due to Valve Transferring Open, $beta_{to}$	0.1	0.1 [Note 2]
all valve types	Due to Valve Transferring Open, $gamma_{to}$	0.5	0.5 [Note 2]

Note 1 - The conservative generic valves for SOVs and SRV-Water failure-to-close is used in the SQN analysis.

Note 2 - The conservative generic values for the beta and gamma values are used in the SQN analysis.

The SQN parameters listed in Table 4-3 are bounded by those used in the generic analysis.

4.6.5 Spurious (Transfer) Open Probabilities and Beta Factors

Table 4-4 Spurious Open and Beta Factor Values

Parameter	Component	Description	Value	Source
AOV XO	Air-Operated Valve	Probability AOV spuriously opens per hour	1.82E-07	NUREG/CR-5496 (Section 2.4)
AOV_{BETA}		Beta factor - AOV spuriously opens	1.63E-02	
$P_{topre\text{-}aov}$		Probability AOV spuriously opens during 4-hr CT	7.28E-07	Calculated
$P_{to\text{-}aov}$		Probability AOV spuriously opens during 168-hr CT	3.06E-05	Calculated
CKV XO	Check Valve	Probability CKV spuriously opens per hour (Leakage)	2.96E-08	NUREG/CR-6928 (Table 5-1)

Parameter	Component	Description	Value	Source
CKV_{BETA}		Beta factor - CKV Fails to Remain Closed	3.0E-02	NUREG/CR-5496 (2.5.1.2)
$P_{topre-ckv}$		Probability CKV spuriously opens during 4-hr CT	1.18E-07	Calculated
P_{to-ckv}		Probability CKV spuriously opens during 168-hr CT	4.97E-06	Calculated
MAN XO	Manual Valve	Probability MAN spuriously opens per hour (Leak)	6.67E-08	NUREG/CR-6928 (Table 5-1)
MAN_{BETA}		Beta factor - MAN spuriously opens	0.1	WCAP (Generic)
$P_{topre-man}$		Probability MAN spuriously opens during 4-hr CT	2.67E-07	Calculated
P_{to-man}		Probability MAN spuriously opens during 168-hr CT	1.12E-05	Calculated
MOV XO	Motor-Operated Valve	Probability MOV spuriously opens per hour	4.45E-08	NUREG/CR-6928 (Table 5-1)
MOV_{BETA}		Beta factor - MOV spuriously opens	2.67E-02	NUREG/CR-5496 (2.3.1.2)
$P_{topre-mov}$		Probability MOV spuriously opens during 4-hr CT	1.78E-07	Calculated
P_{to-mov}		Probability MOV spuriously opens during 168-hr CT	7.48E-06	Calculated
SRV XO	Safety Relief Valve	Probability SRV (Water or Steam Release) spuriously opens per hour	2.12E-07	Calculated
SRV_{BETA-W}		Beta factor - SRV-Water fails to reseat after opening	0.22	WCAP
SRV_{BETA-S}		Beta factor - SRV-Water fails to reseat after opening	0.22	WCAP
$P_{topre-srv}$		Probability SRV-Water or Steam spuriously opens during 4-hr CT	8.48E-07	Section 4.6.1
P_{to-srv}		Probability SRV-Water or Steam spuriously opens during 168-hr CT	3.56E-05	Section 4.6.1
SOV XO	Solenoid Operated Valve	Probability SOV spuriously opens per hour	9.23E-08	NUREG/CR-6928 (Table 5-1)

Parameter	Component	Description	Value	Source
SOV_{BETA}		Beta factor - SOV spuriously opens	0.1	WCAP (Generic)
$P_{topre-sov}$		Probability SOV spuriously opens during 4-hr CT	3.69E-07	Calculated
P_{to-sov}		Probability SOV spuriously opens during 168-hr CT	1.55E-06	Calculated

The values listed in Table 4-4 are bounded by those used in the generic analysis.

4.6.6 Additional Inputs

Table 4-5 Additional Inputs

Parameter	Description	Generic Value	Value	Source
PB_{SEIS}	Seismic Pipe Break Probability for Non-Seismically Qualified Pipe	1.0	1.0	Assumed
PB_{RANDOM}	Random Pipe Break Frequency (per year)[1]	1.10E-03	3.14E-03	Ref. 9 Table E-1
P_{topre}	Probability that Valve Spuriously Transfers Open During 4-Hr CT (most limiting valve)	4.00E-06	8.48E-07	Calculated Section 4.6.1
P_{to}	Probability that Valve Spuriously Transfers Open During 168-Hr CT (most limiting valve)	1.68E-04	3.56E-05	Calculated Section 4.6.1
P_{m1}	Probability that a CIV is Disabled due to Maintenance (per demand) during a 4-hr CT	4.00E-06	2.28E-06	Calculated Section 4.6.1
P_{mE}	Probability that Extra Valve is Disabled due to Maintenance (per demand) [assume extra valve currently has 72 hour CT]	Any Valve	4.11E-05	Calculated Section 4.6.1
P_{m2}	Probability that a CIV is Disabled due to Maintenance (per demand) during a 168-hr CT	Any Valve	9.59E-05	Calculated Section 4.6.1

Note 1 - The random (passive) pipe break frequency is based on the most limiting frequency used in the SQN internal flooding analysis.

The values listed in Table 4-5 are bounded by those used in the generic analysis with exception to the random pipe break frequency. Therefore, the generic analysis that include the random pipe break frequency are reanalyzed for SQN to determine the applicable CT.

4.7 Application Tiers 1, 2 and 3

4.7.1 Tier 1 PRA Applicability and Insights

The SQN PRA was subjected to a full scope Peer Review in accordance with R.G. 1.200 [Ref 4] requirements in 2011. The conclusions of the peer review team follow: [Ref 13]

- The overall model structure is robust and well-developed, but needs refinement,
- Documentation is thorough, detailed and well-organized such that comparison with the standard is facilitated,
- The process and tools utilized are at the state-of-technology and generally consistent with Capability Category II, and
- The PRA maintenance and update program includes all necessary processes and does a very good job of tracking pending changes.

The following areas are addressed:

1. Assurance that the plant-specific PRA reflects the as-built, as-operated plant.

   A key attribute to the ASME/ANS Standard is to assess how the PRA modeled the as-built as-operated plant. The Data Analysis technical element addresses this. The PRA model at the time of the Peer Review was judged to meet this requirement, and HLR-MU-B stated that a PRA configuration control process is in place, and governed by procedure which provides a reasonable assurance that the as-built, as-operated planted is reflected through routine maintenance and upgrades to the PRA.

2. Assurance that the applicable PRA updates include the findings from the individual plant evaluation (IPE) and the IPE for External Events.

   The SQN PRA has been updated multiple times since the completion of the IPE and IPEEE from the 1990's. The technical adequacy of the PRA was established by Peer Review in early 2011. The current model of record represents a significantly more mature PRA as compared to the IPE and IPEEE.

3. Assurance that conclusions from the peer review, including facts and observations that are applicable to this application have been resolved.

   For areas, whereby the Peer Review determined work was necessary to meet Capability Category II a Facts & Observation (F&O) was initiated. The resolutions to the F&Os are documented in the PRA Summary Notebook. [Ref 7]

4. Assurance that there is PRA configuration control and updating, including PRA quality assurance programs, associated procedures, and PRA revision schedules.

   TVA procedure NPG-SPP-09.11, Probabilistic Risk Assessment (PRA) Program, covers the management of PRA applications and periodic PRA updates. Periodic changes made to the base plant-specific PRA model are required to incorporate system, structure, component and operating philosophy changes, and new plant-specific data.

5. Assurance that there is PRA adequacy, completeness, and applicability with respect to evaluating the risk associated with the proposed CIV CT extensions.

   SQN specific parameters and PRA results applicable to the proposed risk-informed application of CIV completion time extensions are well documented in references 7 through 10. The PRA has been subjected to a Peer Review in early 2011 that assessed the technical adequacy of the SQN PRA.

6. Assurance that plant design or operational modifications that are related to or could impact the proposed CT extensions are reflected in the PRA revision used in the plant-specific application, or a justification for not including those modifications in the PRA.

   In accordance with TVA procedure NPG-SPP-09.11, "Probabilistic Risk Assessment (RPA) Program," plant modifications or design changes that result in new configurations, alignments, and capabilities of plant system are assessed for inclusion in model updates. Furthermore TVA procedure NEDP-26 "Probabilistic Risk Assessment (PRA)" provides the requirements for the cumulative impact of plant configuration changes, including plant-specific design, procedure and operational changes that require an update to the Model of Record.

4.7.2 Tier 2 Avoidance of Risk-Significant Plant Configurations

The process SQN uses to avoid risk-significant plant configurations is governed by TVA procedure NPG-SPP-07.1, "On-Line Risk Management." The procedure applies to all work activities that affect or have the potential to affect a plant component, system, or unit configuration. A risk assessment methodology is used for on-line maintenance and shutdown operations. For on-line maintenance, a risk assessment is performed prior to implementation and emergent work is evaluated against the assessed scope. Shutdown risk is assessed in accordance with TVA procedure NPG-SPP-07.2, "Outage Management." Furthermore, TVA procedure NPG-SPP-07.3, "Work Activity Risk Management Process" provides an integrated process for assessing and reducing the likelihood and/or consequences of an adverse event. SQN employs a work management process that utilizes Functional Equipment Groups (FEGs). The grouping qualitatively assessed work activities and components and made logic ties that prevent certain risk-significant plant configurations for being scheduled simultaneously.

4.7.3 Tier 3 Risk-Informed Configuration Risk Management

In accordance with the requirements of 10CFR50.65(a)(4) SQN assesses and manages plant configurations prior to taking the maintenance configuration. The proposed plant configuration is modeled in the computer code EOOS (Equipment Out Of Service) to determine the change in the core damage frequency (CDF) and the large early release frequency (LERF). The initial risk assessment is performed six - nine weeks prior to implementation to allow for risk-informed sequencing of activities as necessary and for other actions determined based on risk insights gleaned from the initial assessment. The well defined process is governed by TVA procedure NPG-SPP-07.1, "On-Line Risk Management." The quantified change in risk is used as one input with respect to configuration risk management. Furthermore, the process prescribes successive higher levels of management approval for plant configurations resulting in an increase in risk at various levels. Although not quantified, work management compensatory measures are prescribed as the risk level increases to limit the likelihood of entering an unplanned configuration (i.e., protected trains/equipment) or to limit the consequences of an

unattended action. Outage Risk Management is controlled in accordance with TVA procedure NPG-SPP-7.2.11.

4.8 SQN Specific Analysis

4.8.1 Fault Trees and Applicable Penetrations

The following fault trees were developing to calculate the given penetration configuration.

Table 4-6 Class I Classification and Penetrations:

SQN FT ID	Class / Group Calculation Number	Applicable Penetrations
I_A-1_4	I, A#1 I,B#3 I,C#3	X-79A X-79B X-80 X-82 X-83
I_A-1_168		
I_A-3_4	I,A#3 I,B#5 I, C#5	X-4 X-5 X-6 X-7 X-9A X-9B X-10A X-10B X-11 X-29 X-43A X-43B X-43C X-43D X-47A X-47B X-50A X-52 X-57 X-58 X-59 X-60 X-61 X-62 X-63
I_A-3_168		
I_A-4-4	I,A#4	X-42 X-50B X-51 X-78 X-111 X-112 X-113
I_A-4-168		
I_B-1-4	I,B#1	X-35 X-88 X-117 X-118
I_B-1-168		
I_B-4-4	I,B#4	X-40D(U1) X-40D(U2) X-48A X-48B X-49A X-49B
I_B-4-168		
I_B-5-4	I,B#5	X-46
I_B-5-168		
I_B-6-4	I,B#6	X-53
I_B-6-168		
I_C-1-4	I,C#1	X-19A X-19B
I_C-1-168		

Table 4-7 Class II Classification and Penetrations:

SQN FT ID	Class / Group Calculation Number	Applicable Penetrations
II_A-6-4	II,A#6	X-20A X-20B
II_A-6-168		
II_A-17-4	II,A#17	X-17 X-21 X-32
II_A-17-168		
II_B-2-4	II,B#2	X-15
II_B-2-168		
II_B-X44-4	II,B#X44	X-44
II_B-X44-168		
N/A	II-Type A - Bounding	X-22 X-33 X-107
N/A	II-Type B - Bounding	None

Table 4-8 Class III Classification and Penetrations:

SQN FT ID	Class / Group Calculation Number	Applicable Penetrations
III_A-X12-4	III,A#X12	X-12B X-12C
III_A-X12-8		
III_A-X13-4	III,A#X13	X-13A X-13B X-13C X-13D
III_A-X13-8		
III_A-X14-4	III,A#14	X-14A X-14B X-14C X-14D
III_A-X14-8		
N/A	III-Type A - Bounding	X-12A X-12D
N/A	III-Type B - Bounding	None

Table 4-9 All Classes - Penetrations With CT Extensions Based on WCAP Generic Analyses

Applicable Penetrations
X-16 X-24 X-25C X-26C X-27D X-86A X-86B X-86C X-102 X-104

Table 4-10 Penetrations with One or More Valves Crediting the Small Line Exclusion

Applicable Penetrations
X-4 X-5 X-6 X-7 X-9A X-9B X-10A X-10B X-11 X-15 X-16 X-17 X-19A X-19B X-20A X-20B X-21 X-22 X-23 X-24 X-25A(U1) X-25A(U2) X-25B(U1) X-25B(U2) X-25D(U1) X-25D(U2) X-26A X-26B(U1) X-26B(U2) X-27A X-27B X-27C X-29 X-30 X-32 X-33 X-34(U1) X-34(U2) X-35 X-39A X-39B X-41 X-42 X-43A X-43B X-43C X-43D X-45 X-46 X-47A X-47B X-48A X-48B X-49A X-49B X-50A X-50B X-51 X-52 X-56 X-57 X-58 X-59 X-60 X-61 X-62 X-63 X-64 X-65 X-66 X-67 X-68(U2) X-69(U2) X-70(U2) X-71(U2) X-72(U2) X-73(U2) X-74(U2) X-75(U2) X-76(U1) X-76(U2) X-77 X-78 X-80 X-82 X-83 X-84A X-85B X-85C X-87B X-87D X-90(U1) X-90(U2) X-91 X-92A(U1) X-92A(U2) X-92B(U1) X-92B(U2) X-93(U1) X-93(U2) X-94A X-94B X-94C X-95A X-95B X-95C X-96C(U1) X-96C(U2) X-97 X-98 X-99(U1) X-99(U2) X-100(U1) X-100(U2) X-101 X-102 X-103 X-104 X-106 X-107 X-111 X-112 X-113 X-114 X-115 X-116A

Table 4-11 Penetrations with No Generic Fit - Not Analyzed By PRA

Applicable Penetrations
X-40A X-40B X-108 X-109

4.8.2 Calculations / Inputs

Two calculations are performed to determine the acceptability of the extended CT. The Incremental Conditional Large Early Release Probability (ICLERP) is based on R.G. 1.177 [Ref 3] acceptable criteria of <5.0E-08. The change in the large early release frequency (ΔLERF) is based on the R.G. 1.174 [Ref 2] acceptance criteria of <1.0E-07/yr.

a) **Class I** - penetrations connected to the containment atmosphere; a failure to isolate a penetration would result in a release path to the environment. Four types:

- Type A- Flow paths connected directly to containment atmosphere and the outside environment.
- Type B- Flow paths closed inside containment and connected directly to the outside environment.
- Type C - Flow paths connected directly to containment atmosphere and closed outside containment.
- Type D - Flow paths closed inside containment and closed outside containment.

Class I Penetrations - Flow Paths Connected to the Containment Atmosphere

Release Type	Details	Comment	Input(s)
Non-seismic CDF Release	For open systems a direct connection from inside to outside containment is possible given a failure to isolate the penetration.	Release due to an internal event CDF. If core damage occurs simultaneous with a failure to isolate (spurious open, fail-to-close, etc.) the penetration a large release could occur.	• CDF_T • CT • Valve Failure Probability
Seismic CDF Release	For closed systems (either inside or outside of containment), a seismic-induced core damage event, the assumption is made that the closed loop system piping fails.	Closed systems - seismic event breaches both sides of containment. If this were to occur simultaneous with failure to isolate the penetration, an open pathway to the environment would exist.	• CDF_{seis} • CT • PB_{SEIS} • Valve Failure Probability
Random Pipe Break CDF Release	The configuration would be based on the system being open on one side of containment and the other closed.	Release due to an internal event and a random pipe break. A random pipe break of the closed system simultaneous with a failure to isolate the penetration would present a flow path to the environment.	• CDF_T • CT • PB_{RANDOM} • Valve Failure Probability

b) **Class II -** penetration flow paths connected to the reactor coolant system. Two types:

- Type A - Standby system flow paths.
- Type B - Normally operating system flow paths.

Class II Penetrations - Flow Paths Connected to the Reactor Coolant System

Release Type	Details	Comment	Input(s)
Non-seismic CDF Release	Connected to the RCS and open outside containment.	Release due to an internal event CDF. Core damage simultaneous with CIV failure to isolate (spurious open, fail-to-close, etc.) the penetration a large release could occur.	• CDF_T • CT • Valve Failure Probability
Seismic CDF Release	For system connected to the RCS and open outside it is assumed that a seismic event results in core damage.	Release due to seismic event resulting in core damage whereby all closed loop piping fails both inside and outside containment simultaneous with CIV failure creating an opening to the environment.	• CDF_{SEIS} • CT • PB_{SEIS} • Valve Failure Probability

Release Type	Details	Comment	Input(s)
Random Pipe Break CDF Release	For systems connected to the RCS and open outside containment.	Release due to an internal event and a random pipe break. If core damage were to occur simultaneous with a random pipe break inside containment and a failure to isolate the penetration, the system would no longer be connected to the RCS, therefore, allowing an open flow path to the environment.	• CDF_T • CT • PB_{RANDOM} • Valve Failure Probability
Interfacing System Loss of Coolant Accident (ISLOCA)	For standby systems connected to the RCS and open outside containment.	Release due to containment bypass, if the CIVs fail (CIV failure is the initiator), an ISLOCA would occur resulting in core damage.	• Valve Failure Probability

c) **Class III** - penetrations with flow paths connected to the steam generators. Two types:

- Type A- Flow paths connected to the steam generator secondary side and open to the outside environment.
- Type B- Flow paths connected to the steam generator secondary side and closed to the outside environment.

Class III Penetrations - Flow Paths Connected to the Steam Generator Secondary Side

Release Type	Details	Comment	Input(s)
Seismic CDF Release	For systems connected to the SG secondary side and open or closed outside containment.	Release due to seismic event resulting in core damage whereby all closed loop piping fails both inside and outside containment simultaneous with CIV failure creating an opening to the environment.	• CDF_{SEIS} • CT • PB_{SEIS} • Valve Failure Probability
Random Pipe Break CDF Release	For systems connected to the SG secondary side and open outside containment.	Release due to an internal event and a random pipe break. If core damage were to occur simultaneous with a random pipe break inside containment and a failure to isolate the penetration, the system would no longer be connected to the SGs, therefore, allowing an open flow path to the environment.	• CDF_T • CT • PB_{RANDOM} • Valve Failure Probability

Release Type	Details	Comment	Input(s)
Steam Generator Tube Rupture (SGTR)	For systems connected to the steam generator secondary side and open to the outside atmosphere.	Release due to SGTR simultaneous with a core damage event and failure to isolate the penetration which would result in an open pathway to the environment	• CDF_{SGTR} • Valve Failure Probability • CT
Steam Generator Tube Rupture (SGTR) With Random Pipe Break	For systems connected to the SG secondary side and a closed systems outside containment.	Random pipe break outside of containment followed by a SGTR and CIV failure would result in an open path to the environment.	• CDF_{SGTR} • PB_{RANDOM} • Valve Failure Probability • CT

5.0 Results

The results of the generic analysis and the SQN specific analysis are recorded in Attachment 1. Many CIVs were justified at 168-hr CTs based on application of the generic analysis. Justification could not be made for some CIVs, therefore their CTs remain at 4-hrs.

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-4	30-56	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-57	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-555TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-5	30-58	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-59	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-554TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-6	30-50	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	30-51	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-6 (cont)	30-558TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-7	30-52	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-53	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-557TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-9A	30-8	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-7	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-563TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-9B	30-10	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-9B (cont)	30-9	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-562TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-10A	30-15	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-14	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-561TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-10B	30-17	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	30-16	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-560TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-11	30-20	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-19	This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Assume more limiting condition of valve open. Same valve type IC and OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-559TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release. Normally closed valve.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-12A	3-33	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.3, MFIV.	N/A				
	3-164	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
	3-164A	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
	3-174	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	3-904	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-903	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-857	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-12A (cont)	3-889	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-849	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-853	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	U2 ONLY 2-3-504	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-12B	3-47	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.3, MFIV.	N/A				
	3-502	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC. Drain valve assume same CT as 3-47.	III-A-12BC	System pressure boundary maintained System pressure boundary compromised	8-hrs 8-hrs	8-hrs 8-hrs	8-hrs 8-hrs
X-12C	3-87	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.3, MFIV.	N/A				

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	3-500	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC. Drain valve assume same CT as 3-87.	III-A-12BC	System pressure boundary maintained System pressure boundary compromised	8-hrs 8-hrs	8-hrs 8-hrs	8-hrs 8-hrs
X-12D	3-100	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.3, MFIV.	N/A				
	3-171	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
	3-171A	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
X-12D (cont)	3-175	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
	3-907	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-906	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-858	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-890	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-850	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	3-854	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	UNIT 2 ONLY 2-3-506	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III,A Bounding	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-13A	1-5	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.4, ARV.	N/A				
	1-4	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.2, MSIV.	N/A				
	1-147	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-13A (cont)	1-15	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.5, AFW.	N/A				
	1-522	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-523	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-524	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-525	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-526	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-922	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	1-536	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-13B	1-12	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.4, ARV.	N/A				
	1-11	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.2, MSIV.	N/A				
	1-148	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-13B (cont)	1-517	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-518	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-519	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-520	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-521	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-923	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-534	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-13C	1-23	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.4, ARV.	N/A				
	1-22	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.2, MSIV.	N/A				
	1-149	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-512	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
X-13C (cont)	1-513	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-514	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-515	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-516	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-924	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-532	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-13D	1-30	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.4, ARV.	N/A				

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	1-16	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.3, MFIV.	N/A				
	1-150	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-29	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.2, MSIV.	N/A				
	1-527	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
X-13D (cont)	1-528	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-529	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-530	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-531	THIS VALVE IS NOT COVERED BY ITS SECTION 3.6.3. IT IS COVERED BY ITS SECTION 3.7.1, MSSV.	N/A				
	1-925	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-538	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-13	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-14A	1-182	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve IC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	1-14	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	43-58	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-825	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-14B	1-184	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve IC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-14B (cont)	1-32	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	43-64	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-827	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-14C	1-183	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve IC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-25	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	43-61	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-826	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-14D	1-181	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve IC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-7	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	43-55	Direct connection to Steam Generator. Closed system IC to open system OC. Normally open valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
	1-824	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed valve OC.	III-A-14	System pressure boundary maintained System pressure boundary compromised	8-Hrs 8-Hrs	8-Hrs 8-Hrs	8-Hrs 8-Hrs
X-15	62-72	Normally operating system; RCS connection. 3 Valves IC, 1 normally open, 2 normally closed. 1 Valves OC, normally open. All Valves the same type. This valve normally closed IC.	II-B-2	System pressure boundary maintained System pressure boundary compromised	168-Hrs 168-Hrs	168-Hrs 168-Hrs	168-Hrs 168-Hrs
	62-73	Normally operating system; RCS connection. 3 Valves IC, 1 normally open, 2 normally closed. 1 Valves OC, normally open. All Valves the same type. This valve normally open IC.	II-B-2	System pressure boundary maintained System pressure boundary compromised	168-Hrs 168-Hrs	168-Hrs 168-Hrs	168-Hrs 168-Hrs
	62-74	Normally operating system; RCS connection. 3 Valves IC, 1 normally open, 2 normally closed. 1 Valves OC, normally open. All Valves the same type. This valve normally closed IC.	II-B-2	System pressure boundary maintained System pressure boundary compromised	168-Hrs 168-Hrs	168-Hrs 168-Hrs	168-Hrs 168-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-662	Normally operating system; This valve is a PRESSURE RELIEF VALVE, WHICH RELIEVES TO THE PRESSURIZER RELIEF TANK INSIDE CONTAINMENT and is not directly connected to the RCS, Given this scenario, flow path is also smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-77	Normally operating system; RCS connection. 3 Valves IC, 1 normally open, 2 normally closed. 1 Valves OC, normally open. All Valves the same type. This valve normally open OC.	II-B-2	System pressure boundary maintained System pressure boundary compromised	168-Hrs 168-Hrs	168-Hrs 168-Hrs	168-Hrs 168-Hrs
	62-707	This is a normally closed test valve which communicates with containment atmosphere not RCS for flow thru valve from IC to OC. Therefore flow path is smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-16	62-543	Normally operating system; RCS connection. 1 CIV IC normally open - 1 CIV OC, normally open - different valve types (The normally open check valve IC has another normally open check valve in series between it and the RCS) (The normally open CIV OC has another normally open valve downstream of it, same valve type)	II,B #3	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-90	Normally operating system; RCS connection. 1 CIV IC normally open - 1 CIV OC, normally open - different valve types (The normally open check valve IC has another normally open check valve in series between it and the RCS) (The normally open CIV OC has another normally open valve downstream of it, same valve type)	II,B #3	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-709	Normally operating system; RCS connection. Continues to operate during accident, therefore not considered a path for release directly from RCS since flow continues to be forced into RCS; therefore, release scenario is from containment atmosphere, flow path is smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-544	This is a normally closed test valve which communicates with containment atmosphere not RCS for flow thru valve from IC to OC. Therefore flow path is smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-17	63-640	RCS connection; standby system. Open system IC. Closed system OC. Normally closed valve IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-643	RCS connection; standby system. Open system IC. Closed system OC. Normally closed valve IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
X-17 (cont)	63-158	No direct connection to RCS piping; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-172	RCS connection; standby system. Open system IC. Closed system OC. Normally closed valve IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-637	No direct connection to RCS piping; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-636	No direct connection to RCS; Only release path is from containment atmosphere to environment via RHA. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-642	No direct connection to RCS; Only release path is from containment atmosphere to environment via RHA. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-870	No direct connection to RCS; Only release path is from containment atmosphere to environment via RHA. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-19A	63-72	Standby system. Containment atmosphere at sump. Closed system OC. 1 valve - normally closed (OC or IC)	I-C-1	System pressure boundary maintained Pressure Boundary Compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-593	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-591	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-19B	63-73	Standby system. Containment atmosphere at sump. Closed system OC. 1 valve - normally closed (OC or IC)	I-C-1	System pressure boundary maintained Pressure Boundary Compromised	168-hrs 4-hrs	168-hrs 168-hrs	168-hrs 4-hrs
	63-592	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-590	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-20A	63-112	No direction connection to RCS piping; Line isolated by 2 normally closed valves. Valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-635	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	63-633	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	63-94	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	63-631	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-20A (cont)	63-667	No direction connection to RCS piping; valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-661	No direction connection to RCS piping; valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-833	No direction connection to RCS piping; valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-20B	63-111	No direction connection to RCS piping; Line isolated by 2 normally closed valves. Valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-632	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	63-634	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-20B (cont)	63-93	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	63-630	RCS connection; standby system. 2 check valves IC each have another normally closed check valve in series. 2 valves OC in parallel. 1 normally open and 1 normally closed.	II-A-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-413	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-659	No direction connection to RCS piping; valve is IC; only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-660	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-21	63-167	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-547	RCS connection; standby system; normally closed check valve IC; another check valve upstream IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-549	RCS connection; standby system; normally closed check valve IC; another check valve upstream IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
X-21 (cont)	63-157	No Direct connection to RCS; Open system IC to closed system OC; Normally closed valve OC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-648	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-649	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-650	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-862	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-313A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-314A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-21 (cont)	63-317A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-318A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-22	63-174	Connected to RCS accumulators thru another normally closed FCV. Not directly connected to RCS.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-581	RCS connection; standby system. Open system IC and closed system OC. Normally closed valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-25 (FCV)	RCS connection; standby system. Open system IC and closed system OC. Normally closed valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-26 (FCV)	RCS connection; standby system. Open system IC and closed system OC. Normally closed valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	Unit 2 Only 2-63-816	Not directly connected to RCS. Drain or vent valve. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-25 (FSV)	Not directly connected to RCS. Open system IC to closed system OC. Normally closed valve OC.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-26 (FSV)	Not directly connected to RCS. Open system IC to closed system OC. Normally closed valve OC.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-23	43-310	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-309	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	43-492	Test valve connected to containment atmosphere IC. Only release path is from containment atmosphere to environment via the sampling system. Source piping is 3/8" and smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-24	68-559	No direct connection to RCS; penetration flow path connects open system IC to closed system OC. Normally closed valve IC & OC. Different valve types. This valve IC.	I,A#6	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-505	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-512	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-513	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-511	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-24 (cont)	63-536	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-535	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-534	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-626	No direct connection to RCS; penetration flow path connects open system IC to closed system OC. Normally closed valve IC & OC. Different valve types. This valve OC.	I,A#6	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-627	No direct connection to RCS; penetration flow path connects open system IC to closed system OC. Normally closed valve IC & OC. Different valve types. This valve OC.	I,A#6	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	68-560	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	68-561	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-517	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-518	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-638	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-25A	43-2	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	43-3	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-25B	-	THE DP SENSORS ARE CLOSED SYSTEMS OUTSIDE OF CONTAINMENT THAT ARE ATTACHED DIRECTLY TO CONTAINMENT. NO ISOLATION VALVES ARE EMPLOYED FOR THESE SENSORS AS THEY USE A DOUBLE DIAPHRAGM SYSTEM FOR DP MEASUREMENT. THE DIAPHRAGMS ARE QUALIFIED FOR POST-LOCA USE. NO DIRECT CONNECTION TO RCS. FLOW PATH SMALLEER THAN THAT REQUIRED TO RESULT IN A LARGE RELEASE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-311Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-311X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-44Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-25B (cont)	30-44X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-25C	-	THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-25D	43-11	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-12	Lines connected to the RCS 3/8" in diameter or less are within the makeup capability of plant's charging systems and therefore, are not considered small LOCAs or potential containment bypass pathways. (Sec 8.2.3 of WCAP)	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-26A	-	THE DP SENSORS ARE CLOSED SYSTEMS OUTSIDE OF CONTAINMENT THAT ARE ATTACHED DIRECTLY TO CONTAINMENT. NO ISOLATION VALVES ARE EMPLOYED FOR THESE SENSORS AS THEY USE A DOUBLE DIAPHRAGM SYSTEM FOR DP MEASUREMENT. THE DIAPHRAGMS ARE QUALIFIED FOR POST-LOCA USE. NO DIRECT CONNECTION TO RCS. FLOW PATH SMALLEER THAN THAT REQUIRED TO RESULT IN A LARGE RELEASE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-310Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-310X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-43Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-43X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-26B Unit 1 Only	32-102	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-297	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-295	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-26B Unit 1 Only (cont)	32-292	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-26B Unit 2 Only	32-103	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-348	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-341	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-345	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-26C	-	THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-27A	-	THE DP SENSORS ARE CLOSED SYSTEMS OUTSIDE OF CONTAINMENT THAT ARE ATTACHED DIRECTLY TO CONTAINMENT. NO ISOLATION VALVES ARE EMPLOYED FOR THESE SENSORS AS THEY USE A DOUBLE DIAPHRAGM SYSTEM FOR DP MEASUREMENT. THE DIAPHRAGMS ARE QUALIFIED FOR POST-LOCA USE. NO DIRECT CONNECTION TO RCS. FLOW PATH SMALLEER THAN THAT REQUIRED TO RESULT IN A LARGE RELEASE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-30CX	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-30CY	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-27B	-	THE DP SENSORS ARE CLOSED SYSTEMS OUTSIDE OF CONTAINMENT THAT ARE ATTACHED DIRECTLY TO CONTAINMENT. NO ISOLATION VALVES ARE EMPLOYED FOR THESE SENSORS AS THEY USE A DOUBLE DIAPHRAGM SYSTEM FOR DP MEASUREMENT. THE DIAPHRAGMS ARE QUALIFIED FOR POST-LOCA USE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-42Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-42X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-27C	52-504	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-27C (cont)	52-505	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	52-510	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-27D	-	THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-29	70-89	No direct connection to RCS; penetration flow path connects open system IC to open system OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-698	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-92	No direct connection to RCS; penetration flow path connects open system IC to open system OC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	70-735	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-30	63-71	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-84	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-23	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-537	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-344A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-32	63-21	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-545	RCS connection; standby system; normally closed check valve IC; another check valve upstream IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-543	RCS connection; standby system; normally closed check valve IC; another check valve upstream IC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs
	63-156	No Direct connection to RCS; Open system IC to closed system OC; Normally closed valve OC.	II-A-X17	System pressure boundary maintained System pressure boundary compromised	168-hrs 4-hrs	168-hrs 4-hrs	168-hrs 4-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-541	No direct connection to RCS; isolated from RCS by double check valves. Open system IC to closed system OC. Normally closed valve OC. Drain or vent valve. Assume same CT as the shortest CT of other valves in the penetration.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-32 (cont)	63-823	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-657	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-658	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-864	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-315A	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-316A	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-311A	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-32 (cont)	63-612A	No direct connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-33	63-551	RCS connection; standby system; open system IC to closed system OC. Normally closed valve IC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-553	RCS connection; standby system; open system IC to closed system OC. Normally closed valve IC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-555	RCS connection; standby system; open system IC to closed system OC. Normally closed valve IC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-557	RCS connection; standby system; open system IC to closed system OC. Normally closed valve IC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-121	No direction connection to RCS, standby system. Isolated from RCS by at least 2 normally closed valves. Open system IC to closed system OC. Normally closed valve IC. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-22	Penetration flow path connects OPEN system IC to closed system OC. Normally open valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	63-653	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-33 (cont)	63-654	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-655	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-836	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-656	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-831	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-325A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-326A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-33 (cont)	63-319A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-320A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-321A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-322A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-323A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	63-324A	No direction connection to RCS piping; Valve is IC; Only release path is from containment atmosphere to environment via the SIS system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-34 Unit 1 Only	32-377	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-110	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-34 Unit 1 Only (cont)	32-375	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-373	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-34 Unit 2 Only	32-387	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-111	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-385	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-383	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-35	70-85	No direct connection to RCS; penetration flow path connects closed system IC to open system OC.	I-B-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-703	No direct connection to RCS; penetration flow path connects closed system IC to open system OC.	I-B-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	70-702C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-762	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-702F	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-764	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-35 (cont)	Unit 2 Only 2-70-759	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-39A	77-868	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	63-64	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-867	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-39B	77-849	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	68-305	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-848	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-40A	3-156	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-156A	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-173	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-860	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
X-40A (cont)	3-899	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-900	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-852	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-848	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-888	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-901	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-40B	3-148	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-148A	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-172	THIS VALVE IS NOT COVERED BY TECH SPEC 3.6.3. IT IS COVERED BY TECH SPEC SECTION 3.7.5, AFW.	N/A				
	3-859	Flow thru this valves is from containment atmosphere IC to OC. Flow path smaller in size than that required to result in a large release.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
X-40B (cont)	3-842	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-897	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-896	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-855	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-847	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
	3-851	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	3-887	Direct connection to Steam Generator. Closed system IC to open system OC. Normally closed drain/vent valve OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4 hrs 4 hrs	4 hrs 4 hrs	4 hrs 4 hrs
X-40D	BLF	No direct connection to RCS; penetration flow path connects open system IC to open system OC.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-41	77-127	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-128	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-42	81-502	No direct connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve IC & OC. Different valve type. This valve IC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-42 (cont)	81-12	No direct connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve OC & IC. Different valve type. This valve OC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	81-529	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43A	62-563	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-550	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-549	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-546	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-578	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-555	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43A (cont)	62-571	No direct connection to RCS; Connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-575	No direct connection to RCS; Connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43B	62-561	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-550	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-549	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43B (cont)	62-546	No direct connection to RCS; Normally operating system, continues to operate during accident. Therefore, not considered a path for release directly for RCS since flow continues to be forced into RCS; therefore release scenario is from containment atmosphere.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-577	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-555	No direct connection to RCS; Normally closed vent/drain valve. Isolated from RCS by double check valves. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-569	No direct connection to RCS; Vent/Drain connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-573	No direct connection to RCS; Vent/Drain connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43C	62-562	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-43C (cont)	62-550	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-549	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-546	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-579	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-555	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43C (cont)	62-570	No direct connection to RCS; Connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-574	No direct connection to RCS; Connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-43D	62-560	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-550	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-549	No direct connection to RCS; Normally operating system, continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore, release scenario is from containment atmosphere. Flow path is smaller in size than that required to result in a large release. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-43D (cont)	62-546	No direct connection to RCS; Normally operating system, continues to operate during accident. Therefore, not considered a path for release directly for RCS since flow continues to be forced into RCS; therefore release scenario is from containment atmosphere.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	62-576	Direct connection to the RCS. Normally operating system and continues to operate during accident, therefore not considered a path for release directly for RCS since flow continues to be forced into RCS. Therefore release scenario is from containment atmosphere. Open system IC to Closed system OC. Normally open valve IC.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-555	No direct connection to RCS; Normally closed vent/drain valve. Isolated from RCS by double check valves. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-568	No direct connection to RCS; Vent/Drain connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	62-572	No direct connection to RCS; Vent/Drain connected to containment atmosphere. Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-44	62-61	Direct connection to RCS; Normally operating system, penetration flow path connects open system IC to open system OC; normally open valve IC.	II-B-X44	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	62-639	Direct connection to RCS; Normally operating system, penetration flow path connects open system IC to open system OC; normally closed check valve IC.	II-B-X44	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-44 (cont)	62-63	Direct connection to RCS; Normally operating system, penetration flow path connects open system IC to open system OC; normally open valve OC.	II-B-X44	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-45	77-18	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-19	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-20	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	77-984	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-46	77-9	Normally operating system; RCS connection, however b/c of relief valve on RC drain tank and pump discharge pressure IC (SQN Dwg 47E8330-1), extremely unlikely to reach RCS pressure, therefore considered as containment atmosphere connection from open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-B-5	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	77-10	Normally operating system; RCS connection, however b/c of relief valve on RC drain tank and pump discharge pressure IC (SQN Dwg 47E8330-1), extremely unlikely to reach RCS pressure, therefore considered as containment atmosphere connection from open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an OC valve.	I-B-5	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-46 (cont)	84-511	Normally operating system; RCS connection, however b/c of relief valve on RC drain tank and pump discharge pressure IC (SQN Dwg 47E8330-1), extremely unlikely to reach RCS pressure, therefore given this scenario, flow path is also smaller in size than that required to result in a large release	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-47A	61-191	No connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	61-192	No connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	61-533	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-532	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-47B	61-193	No connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	61-194	No connection to RCS; penetration flow path connects open system IC to open system OC; normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	61-680	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	61-681	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-48A	72-547	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an IC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-39	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Same valve type. This is an OC valve. .	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-545	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-543	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-48B	72-548	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC. & OC. Different valve type. This is an IC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-2	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an OC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-546	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-544	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-49A	72-556	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an IC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	72-40 (FCV)	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an OC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-49A (cont)	72-215E	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-216E	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-215F	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-216F	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-40 (RFV)	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-552	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-49B	72-555	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an IC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-41 (FCV)	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC & OC. Different valve type. This is an OC valve.	I-B-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	72-217E	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	72-218E	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-217F	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-49B (cont)	72-218F	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-41 (RFV)	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	72-551	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-50A	70-87	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-687	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-90	No direct connection to RCS; penetration flow path connects open system IC to open system. OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-737	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-50B	70-679	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Different valve type. This is an IC valve.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	70-134	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Different valve type. This is an OC valve.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-678B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-51	26-1260	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally closed valve IC. NO valve OC. Different valve types. This is an IC valve.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	26-240	No direct connection to RCS; penetration flow path connects open system IC to closed system OC; normally open valve OC. Normally closed IC. Different valve types. This is an OC valve.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	26-1258	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-52	70-791	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-140	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-141	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-691B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-53	70-143	No direct connection to RCS; penetration flow path connects closed system IC to open system OC.	I-B-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-703	No direct connection to RCS; penetration flow path connects closed system IC to open system OC.	I-B-6	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	70-760	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-53 (cont)	70-702B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-765	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	70-702E	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-54	BLF	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Assume blind flanges to be normally closed valves. Same type.	I-A-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 72-hrs	168-hrs 168-hrs	168-hrs 72-hrs
X-56	67-1523D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-83	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-89	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve..	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	67-772	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-561D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-57	67-575D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-57 (cont)	67-111	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-112	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve..	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-58	67-1523A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-107	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-106	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-778	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-561A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-59	67-575A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-87	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve. .	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-88	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve. .	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-60	67-1523B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-90	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-91	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-774	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-561B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-61	67-575B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-103	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	67-104	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-62	67-1523C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-99	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-62 (cont)	67-105	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-776	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-561C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-63	67-575C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-95	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve IC & OC. Same valve type. This is an IC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	67-96	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC & IC. Same valve type. This is an OC valve.	I-A-3	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-64	31C-752	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	31C-223	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-222	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-65	31C-734	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-225	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-65 (cont)	31C-224	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-66	31C-715	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-230	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-229	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-67	31C-697	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-232	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	31C-231	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-68 Unit 2 Only	67-580D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-141	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-578D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-69 Unit 2 Only	67-580A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-130	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-69 Unit 2 Only (cont)	67-579A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-70 Unit 2 Only	67-585B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-297	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-139	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-71 Unit 2 Only	67-585C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-296	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	67-134	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-72 Unit 2 Only	67-585D	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-298	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-142	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-73 Unit 2 Only	67-585A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-73 Unit 2 Only (Cont)	67-295	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-131	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-74 Unit 2 Only	67-580B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-138	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-579B	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-75 Unit 2 Only	67-580C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	67-133	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	67-579C	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-76 Unit 1 Only	33-704	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	33-740	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	33-212	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-76 Unit 2 Only (cont)	33-722	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	33-739	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	33-211	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-77	59-633	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	59-522	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	59-529	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	59-704	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	59-651	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-78	26-1296	No direct connection to RCS; penetration flow path connects open system IC to open system OC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	26-243	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Normally open valve OC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	26-1293	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-79A	BLF	No direct connection to RCS; penetration flow path connects open system IC to open system OC. 1 flange IC and 1 flange OC used to isolate the penetration and analyze as normally closed valves of the same type.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
X-79B	BLF	No direct connection to RCS; penetration flow path connects open system IC to open system OC. 1 flange IC and 1 flange OC used to isolate the penetration and analyze as normally closed valves of the same type.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
X-80	30-40	No direct connection to RCS. This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Open system IC to open system OC. Normally closed valve IC & OC. Same valve type. This is an IC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	30-37	No direct connection to RCS. This valve is normally closed but is intermittently opened to provide for containment min-purge during power operation. Open system IC to open system OC. Normally closed valve OC & IC. Same valve type. This is an OC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-556TP	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-82	78-560	No direct connection to RCS; Penetration flow path connects open system IC to open system OC. Normally closed valve IC & OC. Same valve type. This is an IC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
	78-561	No direct connection to RCS; Penetration flow path connects open system IC to open system OC. Normally closed valve OC & IC. Same valve type. This is an OC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
	78-228A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-83	78-558	No direct connection to RCS; Penetration flow path connects open system IC to open system OC. Normally closed valve IC & OC. Same valve type. This is an IC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
	78-557	No direct connection to RCS; Penetration flow path connects open system IC to open system OC. Normally closed valve OC & IC. Same valve type. This is an OC valve.	I-A-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
	78-226A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-84A	68-308	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	68-307	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-85B		THE DP SENSORS ARE CLOSED SYSTEMS OUTSIDE OF CONTAINMENT THAT ARE ATTACHED DIRECTLY TO CONTAINMENT. NO ISOLATION VALVES ARE EMPLOYED FOR THESE SENSORS AS THEY USE A DOUBLE DIAPHRAGHM SYSTEM FOR DP MEASUREMENT. THE DIAPHGRAMS ARE QUALIFIED FOR POST-LOCA USE. NO DIRECT CONNECTION TO RCS. FLOW PATH SMALLER IN SIZE THAN THAT REQUIRED TO RESULT IN A LARGE RELEASE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-45Y	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-45X	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-85C	-	THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED. FLOW PATH SMALLER IN SIZE THAN THAT REQUIRED TO RESULT IN A LARGE RELEASE.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-86A	-	THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-86B	-	THIS LINE TRANSMITS PRESSURE FROM THE THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-86C	-	THIS LINE TRANSMITS PRESSURE FROM THE THIS LINE TRANSMITS PRESSURE FROM THE PRIMARY SYSTEM TO PRESSURE INSTRUMENTATION. THE LINE IS FLUID FILLED AND DOUBLE DIAPHRAGMED TO PREVENT COMMUNICATION BETWEEN THE PRIMARY SYSTEM FLUID AND THE AUXILIARY BUILDING. NO PRIMARY SYSTEM FLUID TRAVELS THROUGH THE PENETRATION SINCE THE INNER DIAPHRAGM IS LOCATED NEAR THE REACTOR VESSEL. SINCE DOUBLE DIAPHRAGMS ARE EMPLOYED FOR CONTAINMENT ISOLATION, NO CONTAINMENT ISOLATION VALVES ARE USED.	II,A#9	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-87B	52-502	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	52-503	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-87D	52-500	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	52-501	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-88	BLF	No direct connection to RCS; penetration flow path connects open system IC to open system OC. Assume normally closed valve IC and OC. Same valve type.	I-B-1	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-90 Unit 1 Only	32-287	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-80	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-285	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-281	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-90 Unit 2 Only	32-358	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-81	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-90 Unit 2 Only (cont)	32-353	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	32-354	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-91	43-251	Direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-250	Direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-497	Direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-92A, X-92B Unit 1 Only	43-207	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-452	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-424	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-208	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-453	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-423	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-92A, X-92B Unit 2 Only	43-207	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-210A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-525	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-417	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-208	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-210I	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-424	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-421	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-93	43-34	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-35	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-94A	90-109	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	90-107	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-94B	90-108	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	90-107	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-94C	90-110	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	90-111	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-95A	90-115	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	90-113	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-95B	90-114	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	90-113	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-95C	90-116	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	90-117	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-96C	43-22	Direct connection to RCS; Flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-23	Direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-97	30-134	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-135	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-98	52-506	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	52-507	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	52-508	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-99, X-100 Unit 1 Only	43-202	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-451	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-425	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-201	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	43-450	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-426	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-99, X-100 Unit 2 Only	43-202	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-200I	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-426	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-423	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-201	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-200A	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-427	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-419	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-101	43-319	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	43-318	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-474	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-102	3-352C	This line joins to the secondary side of the steam generator inside containment and is considered a closed system inside containment. Direct connection Closed system IC to open system OC. Normally closed valve OC.	III,A #1	System pressure boundary maintained System pressure boundary compromised	8 hrs 8 hrs	72 hrs 72 hrs	8 hrs 8 hrs
	Unit 2 Only 2-3-972	This valve is normally isolated from SG by valves 352A and 352B. Therefore flow is from containment atmosphere inside IC to OC. Open system IC to open system OC. Normally closed valve IC.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-103	43-461	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-317	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-341	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-464	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-104	3-351C	This line joins to the secondary side of the steam generator inside containment and is considered a closed system inside containment. Direct connection Closed system IC to open system OC. Normally closed valve OC.	III,A #1	System pressure boundary maintained System pressure boundary compromised	8 hrs 8 hrs	72 hrs 72 hrs	8 hrs 8 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	Unit 2 Only 2-3-970	This valve is normally isolated from SG by valves 352A and 352B. Therefore flow is from containment atmosphere inside IC to OC. Open system IC to open system OC. Normally closed valve IC.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-104 (cont)	Unit 2 Only 2-3-971	This valve is normally isolated from SG by valves 352A and 352B. Therefore flow is from containment atmosphere inside IC to OC. Open system IC to open system OC. Normally closed valve IC.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-106	43-460	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-325	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-307	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-469	No direct connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-107	74-2	RCS connection; standby system. Open system IC and OC. Normally closed valve IC downstream of another normally closed IC valve.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	74-1	RCS connection; standby system. Normally closed valve IC downstream of another normally closed IC valve.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
	74-505	Standby system, no direct RCS connection. Relief valve discharges to the pressurizer relief tank which does not reach RCS pressure. Therefore, flow path is smaller than minimum size required for a large release.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	74-504	No direct connection to RCS piping. Valve is IC. Only release path is from containment atmosphere to environment via the RHR system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-107 (cont)	74-503	No direct connection to RCS piping. Valve is IC. Only release path is from containment atmosphere to environment via the RHR system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	74-549	No direct connection to RCS piping. Valve is IC. Only release path is from containment atmosphere to environment via the RHR system. Flow path is smaller than minimum size required for a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-108	BLF	No connection to RCS; penetration flow path connects open system IC to open system OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
X-109	BLF	No connection to RCS; penetration flow path connects open system IC to open system OC.	Not Analyzed	System pressure boundary maintained System pressure boundary compromised	4-Hrs 4-Hrs	4-Hrs 4-Hrs	4-Hrs 4-Hrs
X-111	30-46	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	Pressure Boundary Maintained Pressure Boundary Compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-571	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	Pressure Boundary Maintained Pressure Boundary Compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
	30-46AX	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-46AY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-111 (cont)	30-46BY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-112	30-47	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	Pressure Boundary Maintained Pressure Boundary Compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-572	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	Pressure Boundary Maintained Pressure Boundary Compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-47AX	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-47AY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-47BY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-113	30-48	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
	30-573	No RCS connection. The containment vacuum relief isolation butterfly valve is located in series with the vacuum relief valve (spring loaded check valve) all outside of the containment. Open system IC and OC. Normally open valve OC.	I-A-4	System pressure boundary maintained System pressure boundary compromised	168-hrs 168-hrs	168-hrs 168-hrs	168-hrs 168-hrs
X-113 (cont)	30-48AX	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-48AY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	30-48BY	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-114	61-122	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-745	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-110	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-746	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs

SQN Containment Isolation Valve Completion Time Results							
SQN Pent #	**SQN Valve**	**Grouping Explanation**	**Group & Calc # (Note 1)**	**Maintenance Activity Type**	**ICLERP @ CT:**	**ΔLERF @ CT:**	**Justified CT**
X-115	61-97	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-692	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-96	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	61-691	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-116A	43-288	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-116A (cont)	43-287	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
	43-477	No connection to RCS; flow path smaller in size than that required to result in a large release.	Small Line	System pressure boundary maintained System pressure boundary compromised	168 hrs 168 hrs	168 hrs 168 hrs	168 hrs 168 hrs
X-117	BLF	No connection to RCS; penetration flow path connects open system IC to open system OC.	I-B-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs
X-118	BLF	No connection to RCS; penetration flow path connects open system IC to open system OC.	I-B-1	System pressure boundary maintained System pressure boundary compromised	72-hrs 72-hrs	168-hrs 168-hrs	72-hrs 72-hrs

Note 1 – Group/Calc # such as I,A#6, II,A#9, II,B#3, etc. match the generic configurations and use the CT times from the generic calculations for WCAP-15791-P-A, Revision 2. Group/Clac# such as I-A-1, I-B-3, II-B-2, etc. match the generic configurations of the WCAP but the CT times were determined by calculations using SQN specific PRA values. Group/Calc # III-A-12BC, III-A-13, III-A-14, II-A-X17, II-B-X44, II-A-BOUNDING do not match generic configurations of the WCAP and have been analyzed and CT times determined using SQN specific configurations and SQN specific PRA values. The evaluations for the CTs for all the CIVs are documented in TVAs PRA Evaluation Response, SQN-0-13-072. The CIVs marked as “Not Analyzed” either did not match the generic configurations and it was not advantageous to perform a specific SQN analysis that would increase the CT times greater than the original 4 hours or generic configurations did not yield a CT greater than the original 4 hours.

ENCLOSURE 6

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Disposition of Existing License Amendment Requests

DISPOSITION OF EXISTING LICENSE AMENDMENT REQUESTS

The following License Amendment Requests are under NRC review. The following table describes the request, and its affect on the ITS conversion, and its disposition.

DISPOSITION OF EXISTING LICENSE AMENDMENT REQUESTS				
Submittal Date	Description of Change	Affected ITS Submittal Sections/ Specifications	Affected CTS Pages	Disposition
August 10, 2012	Application to Revise Sequoyah Nuclear Plant Units 1 and 2 Updated Final Safety Analysis Report Regarding Changes to Hydrologic Analysis, (SQN-TS-12-02)	None	None	This is currently with the NRC for review.
January 7, 2013	Sequoyah Nuclear Plant, Units 1 and 2 License Renewal	None	None	This is currently with the NRC for review.
July 3, 2013	Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (SQN-TS-12-04)	ITS: 3.6.12	Unit 1 3/4 6-26, 3/4 6-27 Unit 2 3/4 6-27, 3/4 6-28	Proposed changes are already reflected in this ITS submittal. Changes are annotated with an "A" DOC referencing the previously submitted LAR. See ITS 3.6.12 DOC A02.
October 2, 2013	Sequoyah Nuclear Plant (SQN), Units 1 and 2 - Proposed Technical Specification (TS) Change, "Ultimate Heat Sink (UHS) Temperature Limitations Supporting Alternate Essential Raw Cooling Water (ERCW) Loop Alignments (TS-SQN-13-01 and 13-02)"	ITS: 3.7.9	Units 1 and 2 3/4 7-14	Proposed changes are already reflected in this ITS submittal. Changes are annotated with an "A" DOC referencing the previously submitted LAR. See ITS 3.7.9 DOC A02.

ENCLOSURE 7

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Disposition of Generic Changes to NUREG-1431, Revision 4.0

Contents

DISPOSITION OF GENERIC CHANGES TO NUREG-1431, REVISION 4.0

The following Nuclear Regulatory Commission (NRC)-approved (as of October 4, 2013) Technical Specification Task Force (TSTF) changes are adopted in whole or in part in the Sequoyah Nuclear Plant (SQN) Improved Technical Specifications (ITS) submittal:

TSTF's Adopted		
TSTF	**Description of TSTF**	**ITS Location**
TSTF-490-A, Rev. 0	Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec	1.1 and 3.4.16
TSTF-510-A, Rev. 2	Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection	3.4.17 and 5.5.7
TSTF-522-A, Rev. 0	Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month	3.6.10, 3.7.10, and 3.7.12

DISPOSITION OF GENERIC CHANGES TO NUREG-1431, REVISION 4.0

The following NRC-approved (as of October 4, 2013) TSTF changes have not been included in the SQN ITS submittal:

TSTF's Approved – Not Adopted		
TSTF	**Description of TSTF**	**Reason for Not Adopting**
TSTF-432-A, Rev. 1	Change in Technical Specifications End States (WCAP-16294)	TVA has decided not to incorporate this allowance.
TSTF-505-A, Rev. 1	Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b	TVA has decided not to incorporate this allowance.

The following TSTFs are under NRC review, not approved as of the date of this submittal, but TVA is proposing to adopt into SQN ITS:

TSTF's Under NRC Review – Adopting		
TSTF	**Description of TSTF**	**ITS Specification**
None		

ENCLOSURE 8

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Regulatory Commitments

REGULATORY COMMITMENTS

No.	Commitments for TSTF-411/418	Due Date/Event
1	Activities that degrade the availability of the AFW system, Reactor Coolant System (RCS) pressure relief system (pressurizer PORVs and safety valves), AMSAC, or Turbine Trip should not be scheduled when a logic cabinet is unavailable.	Upon Implementation
2	One complete Emergency Core Cooling System (ECCS) train that can be actuated automatically must be maintained when a logic cabinet is unavailable.	Upon Implementation
3	Activities that cause analog channels to be unavailable should not be scheduled when a logic cabinet is unavailable.	Upon Implementation
4	Activities on electrical systems (e.g., AC and DC power) and cooling systems (e.g., Essential Raw Cooling Water System (ERCW) and Component Cooling Water System (CCS) that support the systems or functions listed in the three commitments above (AFW, RCS pressure relief systems, AMSAC, Turbine Trip, or ECCS) should not be scheduled when a logic cabinet is unavailable. That is, one complete train of a function that supports a complete train of a function noted above must be available.	Upon Implementation
5	Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip should not be scheduled when a RTB is out of service.	Upon Implementation
6	Activities that degrade other components of the RPS, including master and slave relays, and activities that cause analog channels to be unavailable should not be scheduled when a RTB is unavailable.	Upon Implementation
No.	**Commitments for TSTF-427**	**Due Date/Event**
7	Sequoyah Unit 1 & Unit 2 will incorporate the guidance of NUMARC 93-01 Section 11, which provides guidance and details on the assessment and management of risk during maintenance.	Upon Implementation
8	Sequoyah Unit 1 & Unit 2 will revise procedures to ensure that the risk assessment and management process described in NEI 04-08 is used whenever a barrier is considered unavailable and the requirements of LCO 3.0.9 are to be applied, in accordance with an overall configuration risk management program (CRMP) to ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified and avoided	Upon Implementation

No.	Commitments for TSTF-446	Due Date/Event
9	Sequoyah Unit 1 & Unit 2 will implement the capability to assess the effect on incremental large early release probability when using the extended completion times for containment isolation valves in the program for managing risk in accordance with 10 CFR 50.65(a)(4) and the plant-specific configuration risk management program.	Upon Implementation
No.	**Commitments for TSTF-493**	**Due Date/Event**
10	Sequoyah will revise the UFSAR to include the methodologies used to determine the as-found and as-left tolerances for Limiting Safety Setting System (LSSS) instrument channel setpoints.	Upon Implementation
11	Sequoyah will develop a monitoring program to adequately track the performance of Master Relays, Slave Relays, Logic Cabinets, Universal Logic Cards, Undervoltage Driver Cards, Safeguards Driver Cards, and Reactor Trip Breakers. (Reference Westinghouse Reports Section 3.2 and 3.5)	Upon Implementation

The above table identifies 11 commitments by TVA in Enclosure 8 for the SQN conversion to Improved Technical Specifications license amendment request (LAR). Any other statements in this LAR submittal are provided for informational purposes and are not considered regulatory commitments.

ENCLOSURE 9

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

List of Required Final Safety Analysis Report (FSAR) Descriptions For TSTF-500

LIST OF REQUIRED FINAL SAFETY ANALYSIS REPORT (FSAR) DESCRIPTIONS FOR TSTF-500

The following table identifies FSAR descriptions for the Diesel Generator and Vital Batteries required by Sequoyah Nuclear Plant, Units 1 and Unit 2, as part of the adoption of TSTF-500, Revision 2. These changes will be included with the required implementation date in the Issuance of Amendment letter.

REQUIRED FSAR DESCRIPTION	DUE DATE/EVENT
Sequoyah will change or verify that the FSAR: 1. Describes how a 5 percent design margin for the 125V Vital batteries corresponds to a 2 amp float current value indicating that the battery is 98 percent charged. 2. Describes how a 5 percent design margin for the Diesel Generator batteries corresponds to a 1 amp float current value indicating that the battery is 98 percent charged. 3. States that long term battery performance is supported by maintaining a float voltage greater than or equal to the minimum established design limits provided by the battery manufacturer, which corresponds to 2.13 V per connected cell and that there are 60 connected cells in the battery, which corresponds to 127.8 V at the battery terminals. 4. Describes how the batteries are sized with correction margins that include temperature and aging and how these margins are maintained. 5. States the minimum established design limit for battery terminal float voltage. 6. States the minimum established design limit for electrolyte level. 7. States the minimum established design limit for electrolyte temperature. 8. Describes how each battery is designed with additional capacity above that required by the design duty cycles to allow for temperature variations and other factors. 9. Describes normal DC system operation (i.e., powered from the battery chargers) with the batteries floating on the system, and a loss of normal power to the battery charger describing how the DC load is automatically powered from the station batteries.	Upon implementation (applies to all)

10. Describes the availability of a means to charge the Vital Batteries and a description that the battery charger is capable of being supplied power from a power source that is independent of the offsite power supply. Specification 3.8.4, Required Action A.3	

ENCLOSURE 10

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Relocate Surveillance Frequencies to Licensee Control RITS-TF Initiative 5b (TSTF-425)

RELOCATE SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL
RITS-TF INITIATIVE 5b (TSTF-425)
PRA Write-Up

Purpose:

Risk-Informed Technical Specification (TS) initiative 5b proposes to relocate the control of surveillance requirement test frequencies for the majority of surveillance requirements from TS to an owner controlled program.

Scope:

Relocation of surveillance test frequencies outside of the technical specifications allows the licensee to use a risk-informed approach to determine the periodicity for performance of a given surveillance without having to make a change to the Sequoyah operating license. Initially the scope of this initiative, for Sequoyah, is to relocate the surveillance frequencies from TS, then at a later date risk-inform the frequencies on a case-by-case basis.

References:

1. TSTF-IG-10-01, "Implementation Guidance for TSTF-425 Revision 3, Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b," July 2010
2. TSTF-425 Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b"
3. NEI 04-10 Revision 1, "Risk-Informed Method for Control of Surveillance Frequencies"
4. R.G. 1.174 Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis"
5. R.G. 1.200 Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"
6. ASME/ANS RA-Sa-2009, "Addenda to ASME/ANS RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," American Society of Mechanical Engineers, New York, NY, February 2009. Parts 2 and 3
7. Westinghouse LTR_RAM-II-11-010 , "RG 1.200 PRA Peer Review Against the ASME/ANS PRA Standard Requirements for the Sequoyah Nuclear Plant Probabilistic Risk Assessment" (Dated March 18, 2011)[1]
8. NUC-SQN-MEB-MDN-000-000-2010-0200 Revision 1, "SQN Probabilistic Risk Assessment – Summary Document"
9. NUC-SQN-MEB-MDN-000-000-2010-0208 Revision 2, "SQN Probabilistic Risk Assessment – Quantification Notebook"
10. NUC-SQN-MEB-MDN-000-000-2010-0209 Revision 0, "SQN Probabilistic Risk Assessment - Uncertainty and Sensitivity Analysis"
11. NPG-SPP-09.3 Revision 13, "Plant Modifications and Engineering Change Control"
12. NPG-SPP-09.11 Revision 2, "Probabilistic Risk Assessment (PRA) Program"

[1] Task PA-RMSC-0386

13. NEDP-26 Revision 6 – "Probabilistic Risk Assessment (PRA)"

Requirements:

In accordance with RG 1.200, the NRC expects licensees to demonstrate that the technical adequacy of the PRA used to support a risk-informed application is of sufficient quality. The regulator expects the following information to be submitted.[2] To characterize the quality of the PRA the follow questions must be addressed:

1. [Assurance that] the PRA model represents the as-designed or as-built, as-operated plant.

The Sequoyah PRA has procedural requirements including processes and controls designed to ensure the PRA model and data represent the as-built, as-operated plant.[Ref. 13] Supporting peer review analysis and other information follows:

The ASME Standard[Ref. 6] High Level Requirements (HLRs) that address the PRA with respect to representing the as-built, as-operated plant, are HLR-DA-B and HLR-MU-B. There are a total of six supporting level requirements for these sub-elements, of which the 2011 Peer Review characterization [Ref. 7 App B] is that the Sequoyah PRA meets these requirements with a capability category I/II/III. [Ref. 7 App A]

Additional Information:

To ensure the PRA model is maintained to represent the as-built, as-operated plant, NEDP-26 Section 3.3 states: "Various information sources shall be monitored by the Corporate/Site PRA Specialist on an ongoing basis to determine changes or new information that will affect the model, model assumptions, or quantification. Information sources include Operating Experience, Technical Specification changes, plant modifications, Maintenance Rule changes, engineering calculation revisions, procedure changes, industry studies, NRC information and PERs[3]."

2. Identification of permanent plant changes (such as design or operational practices) that have an impact on those things modeled in the PRA but have not been incorporated in the baseline PRA model. If a plant change has not been incorporated, the licensee provides a justification of why the change does not impact the PRA results used to support the application. This justification should be in the form of a sensitivity study that demonstrates the accident sequences or contributors significant to the application decision were not adversely impacted (remained the same).

Nuclear Power Group (NPG) procedure "Plant Modifications and Engineering Change Control" [Ref. 11] governs the process for making changes across the TVA fleet. This procedure has check lists that require the engineer to assess the potential impact on PRA criteria. If there

[2] Previously submitted documentation may be Referenced if it is adequate for the subject submittal. Reference R.G. 1.200 Revision 2, Section 4.2 "Licensee Submittal Documentation."

[3] PER – Problem Evaluation Report, i.e., corrective action program.

is a "yes" response to any of the questions, an interface with the PRA group is required, and a review of the proposed design modification is performed in accordance with the PRA Program.[Ref. 12] As of this submittal, there are no outstanding plant changes that necessitate a change to the Model of Record (MOR) dated June 3, 2011.

3. Documentation that the parts of the PRA required to produce the results used in the decision are performed consistently with the standard as endorsed in the appendices of this regulatory guide. If a requirement of the standard (as endorsed in the appendix to this guide) has not been met, the licensee is to provide a justification of why it is acceptable that the requirement has not been met. This justification should be in the form of a sensitivity study that demonstrates the accident sequences or contributors significant to the application were not impacted (remained the same).

To appropriately evaluate the change in risk associated with a change in the periodicity of a given surveillance frequency all technical elements for a Level 1 and Level 2 PRA must be met to a minimum of Capability Category II as determined by a peer review team.[4] The Peer Review Team determined that of the 325 supporting requirements (SRs) 313 were applicable to the Sequoyah PRA. Of these, all but 19 where met at capability II or higher (i.e., CC-II, CC-III, CC-I/II, CC-II/III). The 19 SRs are further divided as 11 not met, and 8 met at CC-I.[Ref. 7]

The proposed resolutions for the Facts & Observations (F&Os) associated with these 19 SRs were resolved and incorporated as recommended by the Peer Team with a few exceptions as described as follows. [Ref. 8]

One aspect of F&O 1-15 (SRs AS-B1, AS-A10, and SC-B3) regarding not having explicit treatment of SBO in the accident scenario analysis (e.g., event trees). The reason has been provided to NRC via RAI 7.a.viii.4 (for the Sequoyah SAMA). The TVA response was that to model the SBO accident would have no appreciable enhancement to the PRA insights. The inclusion of the SBO system failures post power recovery have a negligible effect on the CDF; therefore, there would be insignificant impact on the calculations to risk-informed surveillance frequencies.

F&O 4-1 proposes revising tables in the flooding analysis. This was not done because the flooding analysis already had the proposed information in tables provided in Section 5.2 of the SQN Internal Flooding Analysis, MDQ-000-000-2010-0203, and the recommendation would have added an unnecessary redundancy. [Ref. 8]

F&O 4-13 with respect to SR DA-C8 which suggests using plant-specific operational records to determine the time components are configured in their standby status. The change in risk associated with a change in the periodicity of surveillance frequencies is not expected to be

[4] It is recognized that a PRA may not satisfy each technical requirement to the same degree (i.e., capability category as used in the ASME/ANS PRA standard); that is, the capability category achieved for the different technical requirements may vary. The capability category needed to be met for each technical requirement is dependent o n the specific application. In general the staff [NRC] anticipates that current good practice, i.e., Capability Category II of the SAME/ANS PRA Standard, is the level of detail that is adequate for the majority of applications. [Ref.. 5 §2.1]

impacted by the use of split-fractions for systems with a normally operating train/pump, and another in standby.

4. **A summary of the risk assessment methodology used to assess the risk of the application, including how the base PRA model was modified to appropriately model the risk impact of the application and results. (Note that this is the same as that required in the application-specific regulatory guides.)**

   The Sequoyah PRA approach uses computer aided fault tree analysis (CAFTA) and provides a quantitative assessment of the identified risk in terms of scenarios that result in undesired consequences (e.g., core damage and/or large early release) and their frequencies, and is comprised of specific technical elements (e.g., data, HRA, initiators, etc.) in performing the quantification.[Ref. 9] The current phase of this application is to document the technical adequacy of the Sequoyah PRA to support risk-informed changes to surveillance frequencies; however, actual changes will be made at a later date on a case-by-case basis in accordance with the NRC endorsed methodology defined in NEI 04-10. [Ref. 3]

5. **Identification of the key assumptions and approximations relevant to the results used in the decision-making process. Also, include the peer reviewers' assessment of those assumptions. These assessments provide information to the NRC staff in their determination of whether the use of these assumptions and approximations is appropriate for the application, or whether sensitivity studies performed to support the decision are appropriate.**

   For RITS initiative 5b the analyses will quantify the change in risk (including cumulative changes) associated with the change in time between performance of a given surveillance test. In this application, the decision is based on the confidence that the quality of the PRA model meets the requirements to support quantification and characterization of the change in risk due to a change in the frequency surveillances are performed.

   The Peer Review Team characterized the internal events supporting requirements (SRs) associated with key assumptions and approximations and graded these at capability category II or I/II/III. Technical elements included initiating events (IE), accident sequence analysis (AS), success criteria (SC), data analysis (DA), systems analysis (SY), human reliability (HRA), quantification (QU) and large early release (LE). Additionally the rare event approximation received a CC I/II/III in the quantification (QU) technical element.

6. **A discussion of the resolution of the peer review (or self-assessment, for peer reviews performed using the criteria in NEI 00-02) findings and observations that are applicable to the parts of the PRA required for the application. This decision should take the following forms:**

   a. **a discussion of how the PRA model has been changed**

b. a justification in the form of a sensitivity study that demonstrates the accident sequences or contributors significant to the application decision were not adversely impacted (remained the same) by the particular issue

The Peer Review Team reviewed an initial revision of the PRA model using CAFTA. The CAFTA model replaced the RiskMan model previously used at Sequoyah. Since the Team reviewed a draft model, their recommendations did not make a change to the model, but rather supplemented the completion of the model to a rev. 0 status.

Standard sensitivity analyses [Ref. 10] were performed on the following:

- All human Error Probabilities set to their 5th percentile value,
- All Human Error Probabilities set to their 95th percentile value,
- All CCF probabilities set to their 5th percentile value,
- All CCF probabilities set to their 95th percentile value,
- and, All maintenance terms set to zero.

Model specific sensitivity analyses [Ref. 10] were performed on the following:

- Grid reliability and loss of offsite power (LOOP) modeling,
- LOOP frequency, recovery, consequential LOOP, timing,
- Post-LOOP equipment recovery,
- Credit for non-safety related equipment,
- and, Battery depletion.

7. The standards or peer review process documents may recognize different capability categories or grades that are related to level of detail, degree of plant specificity, and degree of realism. The licensee's documentation is to identify the use of the parts of the PRA that conform to capability categories or grades lower than deemed required for the given application (Section 1-3 of ASME/ANS RA-Sa-2009)

RITS initiative 5b requires a quality level of Capability Category II. The Peer Review team stated the Sequoyah PRA does meet the ASME/ANS Standard, and concluded the PRA uses processes and tools that are at the state of the technology and generally consistent with Capability Category II.

Conclusion:

The Sequoyah PRA exhibits the technical adequacy to risk-inform (i.e., make changes) surveillance test intervals (STI) in accordance with the licensee-controlled program (once approved by NRC). These analyses will follow the NRC approved process and methodology as described in NEI 04-10. [Ref. 3]