ATTACHMENT
Byron Station, Units 1 and 2
Inservice Testing Program Plan for the Third Ten Year Interval

Exelon Nuclear

TYPICAL LICENSING AND REGULATORY AFFAIRS CORRESPONDENCE CONCURRENCE FORM

Station(s): Byron Correspondence No.: _____

Subject/Document: 3rd Ten-Year Interval Inservice Testing Program Plan

Document Prepared by: B. Bielasco Location: Byron Extension: 2653

Required Review and Disciplines Assigned by: J. Langan / Licensing Engineer
Title

Type of Review Required: (Reference LS-AA-117)
- ☐ Technical Verification Team Review
- ☒ Individual or Series Review
- ☐ No Technical Review

Note: If the subject document falls within the scope of AD-AA-102, "Station Qualified Review," one of the reviewers must be a Station Qualified Reviewer.

Disciplines Required:

☐ Maintenance	☐ Radiation Protection	☐ Chemistry	☐ Training
☐ Operations	☐ Engineering - I&C	☐ Radwaste	☐ Reg Assurance / Licensing
☐ Rx Engineering	☐ Design Engineering	☐ Engr - Mech Systems	☒ Programs Engineering
☐ Nuclear Fuels	☐ Work Management	☐ Engr - Elect Systems	☒ Other: Corp. IST Manager

Review Concurrence: Signature indicates that the individual has reviewed the subject document and concurs that the content is factual and accurate.

Print Name / Signature	Discipline	Date
Robert E. Shirk / Robert E. Shirk	Corp IST Manager	5/30/06
William A. Bielasco / William A. Bielasco	Engineering Programs - IST	5/31/06
Kenneth N. Kover / Kenneth N. Kover	Eng Pgms Supervisor	6/13/06

EMC 6/13/06

Required Reviews and Signatures (check as appropriate):

☐ Station Qualified Review Required: N/A Date: _____

☐ PORC Approval Required: PORC Meeting No. N/A

JSJ 6/15/06 ☒ Corporate Licensing Concurrence Required: _____ Date: _____

☒ Site Regulatory Assurance Concurrence Required: _____ Date: _____

☐ Station Manager Approval Required: _____ Date: _____

☒ Site Vice President Approval Required: _____ Date: _____

Note: The completed original of this form will be retained by the organization transmitting the submittal (i.e., either Licensing or site Regulatory Assurance) in accordance with RM-AA-101, "Records Management Program."

SRRS ID#: 5A.113

Byron Nuclear Power Station
Units 1 & 2

Inservice Testing Program
Third Ten Year Interval

Commercial Service Dates:

Unit 1 – 9/16/85
Unit 2 – 8/21/87

Byron Nuclear Power Station
4450 N. German Church Rd.
Byron, Illinois 61010

Exelon Generation Company, LLC (EGC)
200 Exelon Way
Kennett Square, PA 19348

TABLE OF CONTENTS

SECTION

1.0 INTRODUCTION

1.1 Purpose

To provide requirements for the performance and administration of assessing the operational readiness of those ASME Class 1, 2, and 3 pumps and valves whose specific functions are required to:

- Shutdown the reactor to the safe shutdown condition,
- Maintaining the safe shutdown condition, or
- To mitigate the consequences of an accident.

Non-ASME components may be included as "augmented" components within the IST Program.

1.2 Scope

All references to the ASME OM Code within this document are intended to apply to the 2001 OM Code through the 2003 Addenda. The program plan was prepared to meet the requirements of the following:

- Subsections of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition through 2003 Addenda as follows:

  - ASME OM Code, Subsection ISTA, *"General Requirements"*

    ISTA contains the requirements directly applicable to inservice testing including the Owner's Responsibility and Records Requirements.

  - ASME OM Code, Subsection ISTB, *"Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants"*

    ISTB establishes the requirements for inservice testing of pumps in light-water reactor nuclear power plants. The pumps covered are those provided with an emergency power source, that are required in the shutting down the reactor to the safe shutdown condition, in maintaining the safe shutdown condition, and/or in mitigation of the consequences of an accident.

- ASME OM Code, Subsection ISTC, *"Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants"*

  ISTC establishes the requirements for inservice testing of valves in light-water reactor nuclear power plants. The valves covered include those which provide overpressure protection and those which are required to perform a specific function, either actively through the changing of valve obturator position or passively by maintaining required obturator position in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.

- ASME OM Code, Mandatory Appendix I, *"Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants"*

  Appendix I provides the requirements for performance testing and monitoring of nuclear plant pressure relief devices. Methods, intervals, and record requirements for monitoring and testing are established, as well as guidelines for the evaluation of results. The Appendix applies to safety valves, safety relief valves, pilot-operated pressure relief valves, power-actuated pressure relief valves, nonreclosing pressure relief devices and vacuum relief devices, including all accessories and appurtenances.

- ASME OM Code, Mandatory Appendix II, *"Check Valve Condition Monitoring Program"*

  Appendix II provides an alternative to the testing or examination requirements of ISTC-3510 through ISTC-5221. The purpose of this program is both to improve valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves.

- ASME OM Code Case OMN-8, Alternative Rules for Preservice and Inservice Testing of Power-Operated Valves That Are Used for System Control and Have a Safety Function per OM-10, is being used on selected valves within the IST Program.

The Byron Nuclear Power Station Pump and Valve Inservice Testing Plan will be in effect through the third 120-month interval.

- Unit One: July, 1, 2006 through June 30, 2016
- Unit Two: July 1, 2006 through June 30, 2016

This plan will be updated as required in accordance with 10 CFR50.55a(f).

This program plan provides a complete listing of those pumps and valves included in the program per the requirements of:

- ISTA *"General Requirements ,"*
- ISTB *"Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants"*
- ISTC *"Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants"*
- Mandatory Appendix I, *"Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants"*
- Mandatory Appendix II, *"Check Valve Condition Monitoring Program"*

The key features of this Plan are: the Pump and Valve table listings, Relief Requests, Refueling Outage Justifications, Cold Shutdown Justifications, and Technical Positions. The Byron Nuclear Power Station Inservice Testing Basis Document includes the justification for inclusion of components in the scope of IST and also the justifications for exclusion from the program. Administrative procedures, surveillance testing procedures, and other records required to define and execute the Inservice Testing Program are all retained and available at Byron Nuclear Power Station.

2.0 INSERVICE TESTING PLAN FOR PUMPS

2.1 Pump Inservice Testing Plan Description

This Program Plan meets the requirements of ASME OM Code Subsection ISTB with the exception of specific relief requests contained in Attachment 2.

2.2 Pump Plan Table Description

The pumps included in the Byron Nuclear Power Station IST Plan are listed in Attachment 12, Inservice Testing Valve Table. The information contained in these tables identifies those pumps required to be tested to the requirements of ASME OM Code Subsection ISTB, the testing parameters and frequency of testing, and associated relief requests and remarks. The headings for the pump tables are delineated below.

System — The unique system identifier.

Pump Name — The descriptive name for the pump.

Pump EPN — The unique Equipment Part Number (EPN) for the pump. Each EPN is preceded with a Unit designator for the pump:

0	Unit 0
1	Unit 1
2	Unit 2

Safety Class — The ASME Code classification of the valve

1	Class 1
2	Class 2
3	Class 3
NC	Non-Code

IST Group — The pump group as defined in ISTB-2000

Group A	Continuous or routinely operated pumps
Group B	Standby pumps not operated routinely

2.2 Pump Plan Table Description (Cont'd)

P&ID	The Piping and Instrumentation Drawing on which the pump is represented.	
P&ID Coor.	The P&ID Coordinate location of the pump.	
Pump Type	The type of pump.	
	C	Centrifugal
	PD	Positive Displacement
	V	Vertical Line Shaft
Pump Driver	The type of pump driver.	
	MOTOR	Motor driven
	TURBINE	Steam turbine driven
	DIESEL	Diesel driven
Test Type	Measured test parameters.	
	PUMP SPEED	Measured only for variable speed pumps.
	DIFFERENTIAL PRESSURE	Calculated from suction and discharge pressures or obtained by direct measurement.
	DISCHARGE PRESSURE	Measured for positive displacement pumps.
	FLOW RATE	Measured using a rate or quantity meter installed in the pump test circuit.
	VIBRATION	Pump bearing vibration.

2.2 Pump Plan Table Description (Cont'd)

Test Freq. — The frequency for performing the specified inservice test.

M3	Quarterly (92 Days)
Y2	Once every two years (Biennial)

Relief Request — A relief request number is listed when a specific code requirement is determined to be impracticable.

Tech. Pos. — A technical position number is listed when the requirements of the code are not easily interpreted and clarifying information is needed. The technical position is used to document how Code requirements are being implemented at the station.

3.0 INSERVICE TESTING PLAN FOR VALVES

3.1 Valve Inservice Testing Plan Description

This plan establishes the test intervals, parameters to be measured and meets the requirements of ASME OM Code Subsection ISTC with the exception of the specific relief requests contained in Attachment 4.

Where the frequency requirements for valve testing have been determined to be impracticable, Cold Shutdown or Refuel Outage Justifications have been identified and written. These justifications are provided in Attachments 6 and 8 respectively.

3.2 Valve Plan Table Description

The valves included in the Byron Nuclear Station IST Plan are listed in Attachment 14, Inservice Testing Valve Table. The information contained in these tables identify those valves that are required to be tested to the requirements of ASME OM Code Subsection ISTC, the test parameters, frequency of testing, and the associated relief requests. The headings for the valve tables are delineated below.

System — The unique system identifier.

Valve Name — The description of the valve.

Valve EPN — A unique identifier for the valve. Each EPN is preceded with a Unit designator for the valve:

0	Unit 0
1	Unit 1
2	Unit 2

Safety Class — The ASME Class abbreviation.

1	Class 1
2	Class 2
3	Class 3
NC	Non-Code

3.2 Valve Plan Table Description (Cont'd)

P&ID — The Piping and Instrumentation Drawing (P&ID) number on which the valve appears. If the valve appears on multiple P&IDs, the primary P&ID will be listed.

P&ID Coor. — The coordinate location on the P&ID where the valve appears.

Category — The code category (or categories) as defined in paragraph 1.4 of OM-10.

A	Seat Leakage Limited
B	Seat Leakage Not Required
C	Self-Actuating Valves
D	Single Use Valves/Rupture Discs

Size — The nominal pipe size of the valve, in inches.

Valve Type — The valve body style abbreviation.

BAL	Ball Valve
BTF	Butterfly Valve
CK	Check Valve
DAM	Damper
DIA	Diaphragm Valve
GA	Gate Valve
GL	Globe Valve
PLG	Plug Valve
PLT	Pilot Valve
PPT	Poppet Valve
RPD	Rupture Disk
RV	Relief Valve
SCK	Stop Check Valve
SHR	Shear Valve/SQUIB Valve
3W	3-Way Valve
4W	4-Way Valve
XFC	Excess Flow Check Valve

3.2 Valve Plan Table Description (Cont'd)

Act. Type — The actuator type abbreviation.

AO	Air Operator
DF	Dual Function (Self Actuated and Power Operated)
EXP	Explosive Actuator
HO	Hydraulic Operator
M	Manual
MO	Motor Operator
SA	Self-Actuating
SAP	Self-Actuated Pilot
SO	Solenoid Operator

Normal Position — The normal position abbreviation. The valve's position during normal power operation. If the system does not operate during power operation, then the normal position is the position of the valve when the system is not operating.

C	Closed
CKL	Closed / Hand Switch Key Locked in Position
LC	Locked Closed
D	De-energized (3-way and 4-way valves)
E	Energized (3-way and 4-way valves)
O	Open
OKL	Open / Hand Switch Key Locked in Position
LO	Locked Open
SYS	System Condition Dependent

3.2 Valve Plan Table Description (Cont'd)

Safety Position — The safety function position(s). For valves that perform safety functions in the open and closed positions more than one safety function position may be specified.

C	Closed
D	De-energized (3-way and 4-way valves)
E	Energized (3-way and 4-way valves)
D/E	De-energized and Energized
O	Open
O/C	Open and Closed

Test Type — The test type abbreviation.

LT	Leakage Rate Test[1]
SC	Exercise Closed
SD	De-energize
SE	Energize
SO	Exercise Open
RT	Relief Valve Test
CC	Exercised Closed – Check Valve[2]
CO	Exercise Open – Check Valve[2]
CP	Partial Exercise Open[2]
DT	Rupture Disk / Explosive Valves
FC	Fail Safe Test Closed
FO	Fail Safe Test Open
PI	Position Indication Test
TMP	Temperature Monitoring (Condition Monitoring)

[1] If more than one type of leak test is performed on a valve, then three letter designations may be used to differentiate between the tests. For example, it is appropriate to designate Appendix J leak tests as "LTJ", low pressure leak tests as "LTL", and high pressure leak tests as "LTH".

[2] Three letter designations may be used for check valve condition monitoring tests to differentiate between the various methods of exercising check valves. The letter following "CC" or "CO"may be "A" for acoustics, "D" for disassembly and inspection, "F" for flow indication, "L" for leakage test, "M" for magnetics, "R" for radiography, or "U" for ultrasonics, or "X" for manual exercise.

3.2 Valve Plan Table Description (Cont'd)

Test Freq. — The test frequency abbreviation.

AJ	Appendix J
CM	Condition Monitoring[1]
CS	Cold Shutdown
M3	Quarterly
OP	Operating Activities[2]
RR	Refuel Outage
S2	Explosive Charge Sample
SA	Check Valve Disassembly Sample
YX	X Years (X = 1, 2,...,10)

Relief Request — A relief request number is listed when a specific code requirement is determined to be impracticable.

Deferred Just. — Deferred Test Justification. This section refers to Cold Shutdown Justifications and Refuel Outage Justifications.

A Cold Shutdown Justification number is listed when the testing frequency coincides with Cold Shutdowns instead of being performed quarterly. Cold Shutdown Justification numbers for valves are prefixed with "CS".

A Refuel Outage Justification number is listed when the testing frequency coincides with Refuel Outages instead of being performed quarterly or during Cold Shutdowns. Refuel Outage Justification numbers for valves are prefixed with "RJ".

[1] Frequency is as indicated in respective Condition Monitoring Plan for that valve group.
[2] Satisfied i.a.w. Technical Position, TP-VA-08, "Non-Safety Function, Check Valve Exercise Testing By Normal Operations."

3.2 Valve Plan Table Description (Cont'd)

Tech. Pos. — A technical position number is listed when the requirements of the code are not easily interpreted and clarifying information is needed. The technical position is used to document how Code requirements are being implemented at the station.

4.0 ATTACHMENTS

ATTACHMENT 1

PUMP RELIEF REQUEST INDEX

(Page 1 of 1)

Relief Request No.	Description	NRC Approval Date
RP-1	Essential Service Water (SX) Makeup Pumps Vibration Limits	Pending
RP-2	Component Cooling Water Comprehensive Test	Pending
RP-3	Control Room Chilled Water Pump Comprehensive Test	Pending
RP-4	AFW ESW Booster Pump Comprehensive Test	**Withdrawn**
RP-5	Essential Service Water (SX) Makeup Pumps Suction Pressure Gauge Accuracy for the Comprehensive Pump Test	Pending
RP-6	Comprehensive Pump Test Alert Range Frequency	Pending

ATTACHMENT 2

PUMP RELIEF REQUESTS

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

0SX02PA Essential Service Water Makeup Pump A
0SX02PB Essential Service Water Makeup Pump B

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTB Table ISTB-5200-1, Vertical Line Shaft and Centrifugal Pumps Test Acceptance Criteria.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the requirement of ASME OM Code Table ISTB-5200-1. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

Table ISTB-5200-1 specifies the vibration limits for vertical line shaft pumps operating at or above 600 rpm as the following for both the Group A and the comprehensive pump test:

Reference Value	Acceptable	Alert	Required Action
V_r	$\leq 2.5\ V_r$	$>2.5\ V_r$ 6.0 V_r or >0.325 in/sec	$>6.0V_r$ or >0.70 in/sec

Due to the unique design of these pumps, normal vibration levels may be as high 0.6 in/sec at the upper gear box location. As a result, the normal vibration levels may exceed the Acceptable and Required Action limits of Table ISTB-5200-1.

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits (Continued)

5. Proposed Alternative and Basis for Use

The objective of the essential service water make-up pump is to maintain cooling tower basin level to compensate for drift losses, evaporation, and blowdown. These pumps automatically start on a low level signal in the cooling tower basin. The pump will continue to operate regardless of whether offsite power is available or not since these pumps are diesel engine driven.

The essential service water make-up pumps are categorized as Group B since they are in a standby system which is not operated routinely except for testing.

The SX Makeup Pumps are a unique design (see Figure 1). A horizontal diesel drives a right angle gearbox located approximately 39 feet above the pump. The driveshaft from the gearbox to the pump consists of five coupled sections and is located in the pump discharge piping column. Pump thrust is carried by bearings physically located within the gearbox. The pump is submerged in river water.

Although these pumps are considered vertical line shaft pumps, the unique design configuration is not addressed by the ASME OM Code. Due to monitoring limitations of this design, and because of the similarity to the requirements for vertical line shaft pumps, vibration is monitored on the gearbox. The limitation of taking the vibration readings at this location is that the resultant vibration readings are not attributable to the pump. Vibration analysis has indicated the vibration readings obtained are the result of vibration induced by the diesel engine and the gearbox itself, along with a resonant condition of the gearbox and its foundation.

Maintenance and inspection activities over the past several years have indicated that the angle gearboxes have been operating properly and without degradation. Maintenance and inspection activities on the pumps have indicated that there has not been any pump degradation due to the vibration observed on the gearboxes. Likewise, the pump units have not caused vibration degradation of the gearboxes. As expected, since these pumps are Group B, little to any degradation has been identified.

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits (Continued)

The pump impellers have been replaced with stainless steel units and the wear rings replaced with a more resistant alloy, due to the adverse service application associated with these pumps. The new pump assemblies were tested at the vendor's facility and exhibited very low vibration levels

Byron Station has previously consulted an industry vibration expert and vendor representative from the gearbox company, in an effort to ensure vibration levels are as low as achievable with this particular pump design, and to assure the existing vibration levels are not indicative of pump degradation. These efforts included the following activities:

- Field service representatives from the gearbox company supervised the refurbishment of the two gearboxes. Both refurbished units were then installed on the pumps. The units that were refurbished had seen a significant amount of service under the historically higher vibration conditions and when inspected did not show any vibration related degradation.

- Bi-directional support braces were installed on the gearboxes to address the vibration resonance problem.

- The gearboxes were precision aligned and the couplings were balance checked upon installation.

All of these efforts combined have resulted in some reduction in the vibration levels; however not enough to remove the pumps from the ASME OM Code Alert Range. Since installation during plant construction, both pumps have experienced vibration levels at the gearbox locations of up to 0.6 in/sec. Byron has concluded that vibration levels recorded at the gearbox locations are normal for the unique design configuration and do not indicate an unusual condition of the gearbox or the pump. The proposed alternative limits below will ensure that required action is taken if vibration levels increase while ensuring the pump is not prematurely declared inoperable.

Since the gearbox normally exhibits relatively high vibration levels, which are not indicative of degradation, the use of Table ISTB-5200-1 would not be practical in that it would require double test frequency when the vibration levels are normal.

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits (Continued)

Bryon Station proposes the use of the following limits when performing vibration testing of the SX Makeup Pumps:

Reference Value	Acceptable	Alert	Required Action
V_r	≤ 2.5 V_r or ≤ 0.55 in/sec	>2.5 V_r to 6.0 V_r or >0.55 in/sec	>6.0V_r or >0.70 in/sec

Increasing the Alert Range limits for these pumps would ensure that pumps are placed in double test frequency at a vibration level that would be abnormal for the SX Makeup Pumps' design configuration.

The basis of the >0.55 in/sec Alert limit was based on vendor concurrence and previous approval of this request during the 2nd 10 year interval (See Attachment 1 – Vendor Concurrence Letters).

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-5200-1 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) Byron Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

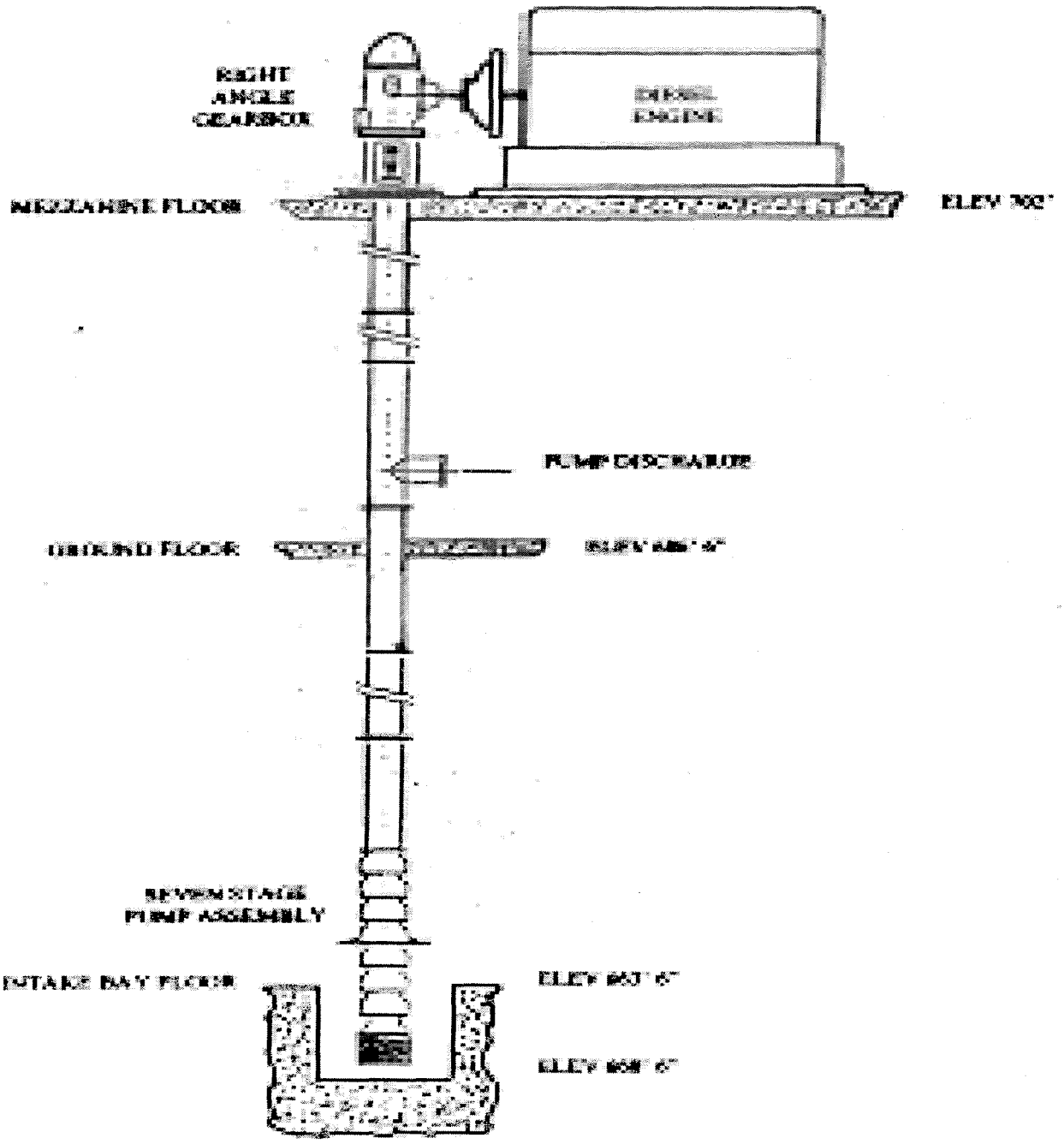
This proposed alternative will be utilized for the entire 3rd 120 month interval.

7. Precedents

This relief request was previously approved for the 2nd 120 Month Interval at Byron Station as relief request PR-2.

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits
Figure 1
SX Makeup Pump Layout



10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits

Attachment 1

Vendor Concurrence Letters

PHILADELPHIA GEAR CORPORATION
181 South Gulph Rd.
King Of Prussia, PA 19406
(610) 265-3000 Fax (610) 337-5837

March 1, 2006

Exelon Nuclear
Byron Station
4450 N. German Church Rd.
Byron IL 61010

Attention: Mike Rebrovic

Subject: Relief request for Essential Service Water Make-Up Pumps vibration

The AGMA (American Gear Manufacturer Assoc.) standard 6000-A88 for measurement of linear vibration applies to this unit. This standard identifies subject unit as a class "II" type gear unit, (gears with a pitch line velocity of ≥ 3000 fpm). Under section 7.1 of this standard the recommended maximum allowable levels of filtered bearing vibration in terms of velocity is 0.3 inches per second peak.
The level of allowable vibration in the AGMA specification is established as a gear manufacturer standard for gear unit testing in the manufacturers shop and does not generally apply to associated equipment in the drive train. Acceptable test and operating limits for additional equipment should be independently specified. In field installation gearbox vibration levels are sometimes higher due to environmental and system influences. The standard can be applied for this particular type of mechanical speed systems as a good barometer of overall machine health.

The Byron Station Essential Service Water Make-Up Pumps have routinely experienced vibration levels above 0.3 inches per second. Historically the higher vibration levels have never been associated with poor pump performance to our knowledge. During the several disassemble and inspection of the gear units overseen by a Philadelphia Gear representative, there was no evidence that the higher levels were detrimental to the gearbox gears bearings or other associated rotating components. Based on the data that these units would see if their use were required, the following action levels would be considered acceptable.

Alarm Value (Actual) = 0.55 IPS overall in any plane
Shutdown (Actual) = 0.7 IPS overall in any plane

Should the measured vibration readings taken periodically indicate an upward trend of overall or discrete frequencies or if the spectrum displays frequencies previously undetected, then further diagnoses shall be required at that time.

PHILADELPHIA GEAR CORP.

George D Lambert
Field Service Engineer

10 CFR 50.55a Relief Request RP-1

Essential Service Water Makeup Pumps Vibration Limits

Attachment 1
Vendor Concurrence Letters

STEWART & STEVENSON SERVICES, INC.

[illegible]

1-21-91
TRANSMISSION DATE

RECIPROCATING ENGINE DIVISION

We are transmitting 1 pages (including cover letter). If transmission is incomplete, please call (713) [illegible].

Please deliver to: Page 1 of 1

NAME Warren Wagner FROM Jim Bell

FIRM Commonwealth Edison PHONE NO (713) [illegible]

FAX NO (815) [illegible] FAX NO (713) [illegible]

REFERENCE: 8V71N Pump Unit
S.O. [illegible]

Dear Mr. Wagner,

As per our telephone conversation Stewart & Stevenson's maximum standard for vibration peak to peak is 6 mils displacement at 1800 RPM horizontal and vertical. This corresponds to .56 inches per second velocity peak.

The existing .56 inches per second velocity peak corresponds to [illegible] mils displacement peak to peak which is within tolerance.

If you have any further questions, please get back with me.

Very truly yours,

Jim Bell

cc: Robert Mitchem

[illegible]

10 CFR 50.55a Relief Request RP-2

Component Cooling Water Pump Comprehensive Test

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

OCC01P	Common Component Cooling Water Pump
1CC01PA	Unit 1 Component Cooling Water Pump A
1CC01PB	Unit 1 Component Cooling Water Pump B
2CC01PA	Unit 2 Component Cooling Water Pump A
2CC01PB	Unit 2 Component Cooling Water Pump B

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTB-3400, Frequency of Inservice Tests

ISTB-5123, Comprehensive Test Procedure

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the ASME OM Code ISTB requirements for performing a comprehensive pump test. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

Specifically, this request would allow Byron Station to perform a modified Group A quarterly test in lieu of a biennial comprehensive test. A substantial flow test will be performed each quarter using instruments which meet the comprehensive test requirements. A biennial comprehensive test will not be performed.

10 CFR 50.55a Relief Request RP-2

Component Cooling Water Pump Comprehensive Test (Continued)

5. Proposed Alternative and Basis for Use

The component cooling pumps must operate to provide cooling water to the residual heat removal pumps and heat exchangers during a loss of coolant accident. Each pump will automatically start on receipt of a safety injection signal or an undervoltage on the associated ESF bus. Single failure analysis of the component cooling pumps credit the alternate unit specific CC pump or the common CC pump with providing the minimum flow requirements in the event of a failure.

The component cooling pumps provide cooling water to non-essential components during plant heat-up, normal power operation, plant shutdown, and refueling. This function is not required for accident mitigation or safe shutdown.

The component cooling water pumps are categorized as Group A since they are operated routinely during plant operations [ISTB-2000].

As an alternative to the code requirement for performing a comprehensive pump test, each of these pumps will have a modified Group A test performed each quarter. During the quarterly test, instruments meeting the accuracy requirements of the Comprehensive Test will be used (i.e., ½ % accurate pressure gauges). The pumps will be operated at a reference flow point within +/- 20% of design flow, with pump differential pressure measured and compared to their reference values. Deviations from the reference values will be compared to the range requirements of Table ISTB-5100-1 for the Group A test (+/- 10%). In addition mechanical vibration measurements will be recorded. The vibration measurements will be compared to their reference values. Any deviations will be compared to the range requirements of Table ISTB-5100-1 for the Group A Test. Corrective actions will be taken in accordance with ISTB-6200.

One of the requirements of the comprehensive test is to perform the test at substantial flow (+/- 20% of design flow). Byron Station will meet this requirement each quarter.

10 CFR 50.55a Relief Request RP-2

Component Cooling Water Pump Comprehensive Test (Continued)

Byron Station will perform a modified group A test as stated above such that the instruments used will meet or exceed the Code requirement for a comprehensive test.

The component cooling water pumps will be tested at a set flow within +/- 20% of design flow. Per Table ISTB-5100-1, the required action range requirement for hydraulic performance is +/- 10 % for the Group A test. No alert range is required. Byron Station will continue to test these pumps at the above conditions each quarter, however, the comprehensive test instrument accuracy requirements of Table ISTB-3500-1 will be applied as follows:

Pressure	+/- ½ %
Flow	+/- 2 %
Vibration	+/- 5 %
Differential Pressure	+/- ½ %

The Component Cooling Water pumps have vibration full spectral analysis performed when vibration measurements are taken during Inservice Testing surveillances.

Performance of a substantial flow test each quarter would result in eight sets of data over a two year period instead of the required one comprehensive test. Byron Station believes this testing regime provides an overall better assessment of pump mechanical and hydraulic health and will determine operational readiness on a quarterly frequency.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) Byron Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire 3rd 120 month interval.

7. Precedents

None

10 CFR 50.55a Relief Request RP-3

Control Room Chilled Water Pump Comprehensive Test

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

0WO01PA Control Room Chilled Water Pump A
0WO01PB Control Room Chilled Water Pump B

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTB-3400, Frequency of Inservice Tests

ISTB-5123, Comprehensive Test Procedure

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the ASME OM Code ISTB requirements for performing a comprehensive pump test. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

Specifically, this request would allow Byron Station to perform a modified Group A quarterly test in lieu of a biennial comprehensive test. A substantial flow test will be performed each quarter using instruments which meet the comprehensive test requirements. A biennial comprehensive test will not be performed.

5. Proposed Alternative and Basis for Use

The Control Room Chilled Water pump must operate to provide chilled water to the Control Room HVAC system chilled water coils during emergency conditions. Single failure analysis of the control room chilled water pump credits the alternate pump with providing the minimum flow requirements in the event of a failure.

10 CFR 50.55a Relief Request RP-3

Control Room Chilled Water Pump Comprehensive Test (Continued)

The control room chilled water pump is categorized as Group A since it is operated routinely during plant operations [ISTB-2000].

As an alternative to the code requirement for performing a comprehensive pump test, each of these pumps will have a modified Group A test performed each quarter. During the quarterly test, instruments meeting the accuracy requirements of the Comprehensive Test will be used (i.e., ½ % accurate pressure gauges). The pumps will be operated at a reference flow point within +/- 20% of design flow, with pump differential pressure measured and compared to their reference values. Deviations from the reference values will be compared to the range requirements of Table ISTB-5100-1 for the Group A test (+/- 10%). In addition mechanical vibration measurements will be recorded. The vibration measurements will be compared to their reference values. Any deviations will be compared to the range requirements of Table ISTB-5100-1 for the Group A Test. Corrective actions will be taken in accordance with ISTB-6200.

One of the requirements of the comprehensive test is to perform the test at substantial flow (+/- 20% of design flow). Byron Station will meet this requirement each quarter.

Byron Station will perform a modified group A test as stated above such that the instruments used will meet or exceed the Code requirement for a comprehensive test.

The Control Room Chilled Water pumps will be tested at a set flow within +/- 20% of design flow. Per Table ISTB-5100-1, the required action range requirement for hydraulic performance is +/- 10 % for the Group A test. No alert range is required. Byron Station will continue to test these pumps at the above conditions each quarter, however, the comprehensive test instrument accuracy requirements of Table ISTB-3500-1 will be applied as follows:

Pressure	+/- ½ %
Flow	+/- 2 %
Vibration	+/- 5 %
Differential Pressure	+/- ½ %

10 CFR 50.55a Relief Request RP-3

Control Room Chilled Water Pump Comprehensive Test (Continued)

The Control Room Chilled Water pumps have vibration full spectral analysis performed when vibration measurements are taken during Inservice Testing surveillances.

Performance of a substantial flow test each quarter would result in eight sets of data over a two year period instead of the required one comprehensive test. Byron Station believes this testing regime provides an overall better assessment of pump mechanical and hydraulic health and will determine operational readiness on a quarterly frequency.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) Byron Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire 3rd 120 month interval.

7. Precedents

None

10 CFR 50.55a Relief Request RP-5

Essential Service Water Makeup Pumps Suction Gauge Accuracy for the Comprehensive Pump Test

Proposed Alternative In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

0SX02PA Essential Service Water Makeup Pump A
0SX02PB Essential Service Water Makeup Pump B

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTB Table ISTB-3500-1 - Required Instrument Accuracy

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the requirement of ASME OM Code ISTB Table ISTB-3500-1. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

Table ISTB-3500-1 specifies the instrument accuracy to be +/- ½ % for pressure during the comprehensive pump test. Due to the design of these pumps (vertical line shaft), the suction pressure is determined using a combination of river level, traveling screen differential level and pump elevation. The traveling screen differential level instrument accuracy is 2%. This accuracy does not meet the requirements of Table ISTB-3500-1 for determining pressure.

5. Proposed Alternative and Basis for Use

The objective of the essential service water make-up pump is to maintain cooling tower basin level to compensate for drift losses, evaporation, and blowdown. These pumps automatically start on a low level signal in the cooling tower basin. The pump will continue to operate regardless of whether offsite power is available or not since these pumps are diesel engine driven.

10 CFR 50.55a Relief Request RP-5

Essential Service Water Makeup Pumps Suction Gauge Accuracy for the Comprehensive Pump Test (Continued)

The essential service water make-up pumps are categorized as Group B since they are in a standby system which is not operated routinely except for testing.

Differential pressure is determined by subtracting the suction pressure from the discharge pressure. Due to the vertical design of these pumps, suction pressure is determined as follows:

$$P_s = [L_r - (DL/12) - 661.75]/ 2.31$$

Where;

P_s = Suction Pressure (psig)
L_r = River Lever (feet)
DL = Traveling Screen Differential Level (inches)
661.75 = Pump Elevation (feet)
2.31 = Constant Conversion for Water (feet of head to psi)

The river elevation (L_r) is the determining factor in the calculation of suction pressure. River elevation varies between approximately 670 and 680 feet based on seasonal factors. The traveling screen differential level is normally less than 12 inches. The accuracy of the existing level instrument is +/- 2%. This equates to a possible error of 0.24 inches. When converted to psi, the maximum error is 0.009 psi ([0.24 inches/12 inches/ft] / 2.308). For the comprehensive test of these pumps the Code required accuracy for pressure is ½ %. This equates to a maximum possible error of 0.06 inches. When converted to psi, the maximum error in the suction pressure is 0.0022 psi ([0.06 inches/12 inches/ft] / 2.308). The difference between the permanently installed instrument and the Code required ½ % accuracy amounts to 0.007 psi. This difference is inconsequential when determining the suction pressure (normal range 3.0 to 5.0 psig).

Additionally, since the differential pressure parameter is driven by the discharge pressure of the pumps, the traveling screen differential level has little bearing on the overall calculation of pump differential pressure. The reference value for differential pressure for these pumps is approximately 150 psi differential. Using the installed 2.0 % differential level instrument induces a maximum error of 0.006% (0.009 psi/150.0 psi).

10 CFR 50.55a Relief Request RP-5

Essential Service Water Makeup Pumps Suction Gauge Accuracy for the Comprehensive Pump Test (Continued)

Increasing the accuracy of the differential level instrument to ½ % would reduce the maximum error to 0.0015 % (0.0022 psi/150.0 psi).

The traveling screen differential level instrument is manufactured by Prosonic, with Model number FMU 862. This instrument is an ultrasonic level instrument. Due to the high turbulence and inherent gauge quality, it is not possible to calibrate this instrument to less than 2.0%. Byron Station has also investigated the use of a different type of instrument, however, due to the application and location of the instrument, more accurate calibration does not seem realistic, especially since the level difference has little effect on overall pump differential pressure determination.

Byron station proposes to perform the Comprehensive Test of these pumps using 2.0 % accurate instruments for determining suction pressure. All other measurements and methods will meet the ½ % accuracy requirements for determining pump differential pressure.

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-3500-1 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) Byron Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire 3rd 120 month interval.

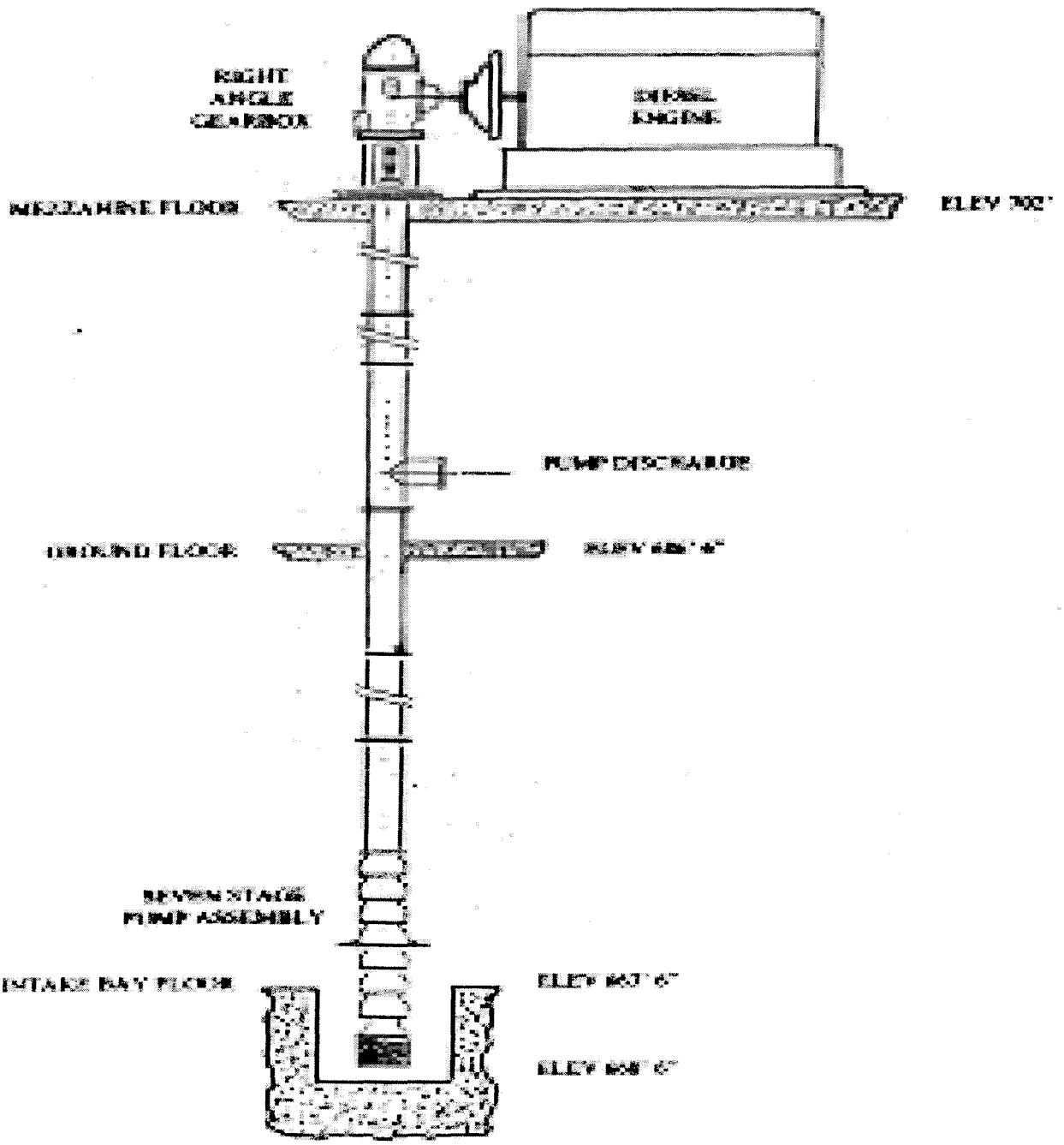
7. Precedents

None

10 CFR 50.55a Relief Request RP-5

Essential Service Water Makeup Pumps Suction Gauge Accuracy for the Comprehensive Pump Test

Figure 1
SX Makeup Pump Layout



10 CFR 50.55a Relief Request RP-6

Comprehensive Pump Test Alert Range Frequency

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

1CV01PA	Centrifugal Charging Pump A
1CV01PB	Centrifugal Charging Pump B
2CV01PA	Centrifugal Charging Pump A
2CV01PB	Centrifugal Charging Pump B
1RH01PA	Residual Heat Removal Pump A
1RH01PB	Residual Heat Removal Pump B
2RH01PA	Residual Heat Removal Pump A
2RH01PB	Residual Heat Removal Pump B
1SI01PA	Safety Injection Pump A
1SI01PB	Safety Injection Pump B
2SI01PA	Safety Injection Pump A
2SI01PB	Safety Injection Pump B

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTB-6200(a)-Alert Range.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the requirement of ASME OM Code ISTB-6200(a) for the Comprehensive Pump Test. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

ISTB-6200(a) requires the frequency of testing specified in Table ISTB-3400 to be doubled if the measure test parameters fall within the alert range of Tables ISTB-5100-1, ISTB-5200-1, ISTB-5300-1 or ISTB-5300-2 as applicable.

10 CFR 50.55a Relief Request RP-6

Comprehensive Pump Test Alert Range Frequency (Continued)

When performing the comprehensive test of the subject pumps, the plant must be in cold shutdown or refueling since substantial flow cannot be achieved during normal operations or during hot shutdown/standby conditions. Imposing the frequency requirements of ISTB-6200(a) for the comprehensive test corrective actions, would require shutting the plant down mid-cycle to perform the comprehensive test. Specifically, for the subject pumps, relief is requested from ISTB-6200(a), Alert Range, for corrective actions during the comprehensive pump test.

5. Proposed Alternative and Basis for Use

All of the subject pumps are essential to operation of the Emergency Core Cooling system (ECCS). These pumps are designed to deliver borated water to the reactor vessel when ECCS is required. Normally the Residual Heat Removal (RH) and Safety Injection (SI) pumps are in standby while one of the Centrifugal Charging (CV) pumps are operating to maintain pressure and level control of the Reactor Coolant (RC) system. All of these pumps are tested during normal operation with minimum flow since injection in to the RCS with large amounts of borated water would cause a plant trip. These pumps are not provided with full flow test loops.

During plant shutdowns with the reactor coolant system less than 200 F, a substantial flow test may be performed. The comprehensive pump test is typically performed on each of the subject pumps during refueling when the RCS is available to receive substantial flow.

Byron Station meets the design flow requirements of ISTB for the comprehensive test. If during the comprehensive test, one of these pumps falls in to the Alert Range for either the hydraulic or mechanical vibration parameters, the test frequency of the comprehensive test would be required to be doubled in accordance with ISTB-6200(a). This would require shutting the respective unit down to perform an annual comprehensive test.

10 CFR 50.55a Relief Request RP-6

Comprehensive Pump Test Alert Range Frequency (Continued)

Byron station proposes the following alternative to the ISTB-6200(a) corrective actions, in lieu of doubling the test frequency should any parameter fall within the alert range during the comprehensive pump test of the subject pumps:

1. The cause of the deviation will be identified and reasonable efforts to correct it will be made while in the refueling mode.

2. If the deviation cannot be corrected while in the refueling mode, unit startup will not be prohibited as long as:

   - An analysis to determine operational readiness with the pump in alert will be made to determine that the pump can continue to perform its intended design function(s) until the next refueling outage.
   - During the cycle, Byron Station will establish plans to correct the deviation at the next refueling outage and each pump will continue to be tested on a quarterly frequency in accordance with their respective Group A or Group B procedure.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-6200(a) identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) Byron Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire 3rd 120 month interval.

7. Precedents

None

ATTACHMENT 3

VALVE RELIEF REQUEST INDEX

(Page 1 of 1)

Relief Request No.	Description	NRC Approval Date
RV-1	Containment Recirculation Sump Isolation Valve Test Frequency (1/2SI8811A/B)	Pending

ATTACHMENT 4

VALVE RELIEF REQUESTS

10 CFR 50.55a Relief Request RV-1

Containment Recirculation Sump Isolation Valve Test Frequency

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Valve Number	Category	Code Class	Number	Coordinate
1SI8811A	B	2	M-61-4	C-5
1SI8811B	B	2	M-61-4	A-5
2SI8811A	B	2	M-136-4	C-5
2SI8811B	B	2	M-136-4	A-5

2. Applicable Code Edition and Addenda

ASME OM Code 2001 Edition through 2003 Addenda

3. Applicable Code Requirement

ISTC-3510, Exercising Test Frequency

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3), relief is requested from the requirement of ASME OM Code ISTC-3510. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

It is impracticable to exercise test these valves during normal plant operation or during cold shutdowns. In addition due to improved planning, scheduling and execution of work, it may not be practicable to exercise these valves during refueling outages. Byron Station will exercise and stroke time these valves once per refueling cycle. The proposed once per cycle test frequency is not provided by ISTC-3510 or by ISTC-3520.

10 CFR 50.55a Relief Request RV-1

Containment Recirculation Sump Isolation Valve Test Frequency (Continued)

5. Proposed Alternative and Basis for Use

The 1/2SI8811A/B valves provide an isolation boundary between the suctions of the residual heat removal (RH) and containment spray (CS) pumps, and the containment recirculation sumps. Under normal plant operating conditions, the RH and CS systems are filled with borated water and the containment recirculation sumps are maintained in a dry state.

A stroke test of these valves requires the RH and CS pumps for a given train to be removed from service and the suction lines drained to prevent water flow from the refueling water storage tank (RWST) and associated system piping into the normally empty containment recirculation sump. It takes approximately 24 hours to drain the RH and CS systems, perform the required valve tests, and refill and restore the systems to their normal configuration. An estimated 600 gallons of radioactive, borated water are drained and must be processed by the radioactive waste systems. This same amount of borated water must be used to refill the system. This sequence of events is required whether the testing is done online or during a refueling outage.

It is impractical to perform these required drain, refill and associated activities on a quarterly frequency.

The history of both the maintenance and in-service testing (IST) for all eight of these valves at Braidwood and Byron show good material condition and that testing is consistent with acceptable stroke times, demonstrating that an acceptable level of quality and safety is maintained with an 18-month test frequency.

The availability of the RH and CS systems can be optimized by performing the full-stroke tests of the containment recirculation sump valves during scheduled work windows for the RH and CS systems. Due to improvements in the logistics of planning and executing work, some maintenance of the RH system is performed on line (i.e., Mode 1). At other times, the nature of the maintenance to be performed requires that the maintenance be performed during a refueling outage. Considerations, which impact when this work is performed, include the scope of the work on the system, the scheduling of work windows in the planning process, system availability requirements, personnel resources, and maintenance of an acceptable risk profile.

10 CFR 50.55a Relief Request RV-1

Containment Recirculation Sump Isolation Valve Test Frequency (Continued)

In order to minimize the number of drain/refill evolutions and the processing of radioactive, borated water described previously, it is advantageous to perform the containment recirculation sump valve exercise and stroke time tests during the same drain and refill evolution used to perform system maintenance.

In conclusion, due to the unique requirement of having to drain and fill the suction line associated with the containment recirculation sump valves to perform the stroke time and exercise test, it is impractical to test these valves at a quarterly frequency. As maintenance on the RH system often times requires the same suction line to be drained and filled, and many of these maintenance activities can now be performed on line, it is impractical to restrict the testing of these valves to a cold shutdown or refueling outage. An equivalent level of quality and safety would be provided by testing these valves at an 18-month frequency with a 25% allowance for flexibility in scheduling.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire 3rd 120 month interval.

7. Precedents

This relief request was previously approved for the 2nd 120 Month Interval at Byron Station as relief request RV-9.

ATTACHMENT 5

COLD SHUTDOWN JUSTIFICATION INDEX

(Page 1 of 2)

Designator	Description	Date
CS-1	(1/2MS001A-D) Stroke Time Test (SC) during Cold Shutdown	July 1, 2006
CS-2	(1/2CV8104; 1/2CV8442; 1/2CV8804A; 1/2CV112D; 1/2CV112E) Full Stroke Test of 1/2CV8442 and Stroke Time Test of remaining valves during Cold Shutdown	July 1, 2006
CS-3	(1/2FW009A-D) Stroke Time Test (SC) during Cold Shutdown	July 1, 2006
CS-4	(1/2CV112B; 1/2CV112C; 1/2CV8105; 1/2CV8106; 1/2CV8152; 1/2CV8160) Stroke Time Test (SC) during Cold Shutdown and Fail Safe Test Closed (FC) of 1/2CV8152 and 1/2CV8160 during Cold Shutdown	July 1, 2006
CS-5	(1/2RH8701A/B; 1/2RH8702A/B) Stroke Time Test (SC) during Cold Shutdown	July 1, 2006
CS-6	(1/2RC014A-D) Stroke Time Test (SC) / Fail Safe Test Closed (FC) during Cold Shutdown	July 1, 2006
CS-7	(1/2RH8730A/B) Full Stroke Test (CO) / Close Stroke Test (CC) during Cold Shutdown	July 1, 2006
CS-8	(1/2SI8818A-D; 1/2SI8958A/B) Full Stroke Test (CO) during Cold Shutdown	July 1, 2006
CS-9	(2FW039A-D) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	July 1, 2006
CS-10	(1/2CV459; 1/2CV460) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	July 1, 2006

COLD SHUTDOWN JUSTIFICATION INDEX

(Page 2 of 2)

Designator	Description	Date
CS-11	(1/2SI8801A/B) Stroke Time Test (SO/SC) during Cold Shutdown	July 1, 2006
CS-12	(1/2SI8802A/B; 1/2SI8806; 1/2SI8809A/B; 1/2SI8813; 1/2SI8835; 1/2SI8840) Stroke Time Test (SO/SC) during Cold Shutdown	July 1, 2006
CS-13	Pressure Isolation Valves (PIVs) and 1/2RH8705A/B Leak Test (LT) during Cold Shutdown for all per Technical Specifications and Close Stroke Test (CC) for Check Valves at the same frequency	July 1, 2006
CS-14	(1/2RH8716A/B) Stroke Time Test (SO/SC) during Cold Shutdown	July 1, 2006
CS-15	(1/2CC685, 1/2CC9413A, 1/2CC9414, 1/2CC9415, 1/2CC9416, 1/2CC9438, 1/2CV8100, 1/2CV8112) Stroke Time Test (SC) during Cold Shutdown with no RCPs running	July 1, 2006
CS-16	(1/2SI8808A-D) Stroke Time Test (SC) during Cold Shutdown	July 1, 2006
CS-17	(1/2CV8355A-D) Stroke Time Test (SO) during Cold Shutdown with no RCPs running	July 1, 2006
CS-18	(1SD054A-H; 2SD054B,D,F,H) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	July 1, 2006
CS-19	(1/2VQ001A,B; 1/2VQ002A,B) Stroke Time Test (SC) and Fail Safe Test Closed (FC) During Cold Shutdown or as Required to Declare Operability	July 1, 2006

ATTACHMENT 6

COLD SHUTDOWN JUSTIFICATION: CS-1

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2MS001A	Main Steam	2	B
1/2MS001B	Main Steam	2	B
1/2MS001C	Main Steam	2	B
1/2MS001D	Main Steam	2	B

Component Function(s)

These are the Main Steam Isolation Valves (MSIVs). In the normally open position, steam is supplied to the turbine. The valves are required to close to isolate the main steam line to prevent: reverse flow into containment during a main steam line break, Steam Generator Blowdown during a major steam line break outside of containment, and secondary system contamination from a Steam Generator tube rupture.

Justification

Closure of the main steam isolation valves 1MS001A-D or 2MS001A-D during Unit operation would result in a significant steam generator transient and a manual reactor trip. Failure of these valves during partial stroke testing can result in valve closure and subsequent reactor trip. NUREG-1482, Revision 1, Section 4.2.6, footnote 5 states "MSIV's should not be tested at power, since even a part stroke exercise increases the risk of valve closure when the unit is generating power".

Because stroke testing of these valves at power would result in a reactor trip, and because partial stroke testing at power presents the unwarranted risk of a potential reactor trip, testing of these valves during operation is not practical. Stroke time testing of the Main Steam Isolation Valves will be completed during cold shutdown, as conditions allow, in accordance with ISTC-3521(c). The actual test modes are Modes 3-6, but normally testing is performed in Modes 3 or 4 before or after cold shutdowns.

COLD SHUTDOWN JUSTIFICATION: CS-2

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2CV8104	Chemical and Volume Control	2	B
1/2CV8442	Chemical and Volume Control	2	C
1/2CV8804A	Chemical And Volume Control	2	B
1/2CV112D	Chemical And Volume Control	2	B
1/2CV112E	Chemical And Volume Control	2	B

Component Function(s)

These are the emergency boration flow path valves. The 1/2CV8104 is the emergency boration valve and the 1/2CV8442 is the emergency boration header check valve. The 1/2CV8804A is the RH heat exchanger 1A to charging pumps suction isolation valve required to be open for Post LOCA recovery. The 1/2CV112D and 1/2CV112E are the RWST to charging pumps suction isolation valves which are in the emergency boration flow path when the RWST is the Boration Source.

Justification

The testing of any emergency boration flow path valves during Unit operation is not practical. Stroke testing the boric acid injection isolation valve 1/2CV8104 and check valve 1/2CV8442, the RH to CV pump suction isolation valve 1/2CV8804A, or the RWST to CV pump suction isolation valves 1/2CV112D/E could result in boration of the RCS, resulting in a cooldown or reactivity transient. Aligning the system in this configuration even for a short duration is, therefore, unacceptable. These valves will be stroke tested during cold shutdown, in accordance with ISTC-3521(c) and ISTC-3522(b) as applicable.

1/2CV8442 Note

Valves 1/2CV8442 are included in the Check Valve Condition Monitoring Program. Should they be removed from that program they would require being tested to the "regular," valve Code – ISTC, in accordance with this deferral. These valves are tested with the above valves, at a Cold Shutdown frequency, as they are part of the test lineup. They will continue to be listed in this Cold Shutdown Justification for these reasons.

COLD SHUTDOWN JUSTIFICATION: CS-3

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2FW009A	Feed Water	2	B
1/2FW009B	Feed Water	2	B
1/2FW009C	Feed Water	2	B
1/2FW009D	Feed Water	2	B

Component Function(s)

These are the main feedwater isolation valves (FWIV's). They are open during normal operation to allow flow to the Steam Generator (non-IST function). They are required to close for Feedwater Isolation and Containment Isolation.

Justification

The main feedwater isolation valves cannot be fully stroked during operation as feedwater would be terminated causing a reactor trip. Failure of these valves during partial stroke testing can result in valve closure and subsequent reactor trip.

Because stroke testing of these valves at power would result in a reactor trip, and because partial stroke testing at power presents the unwarranted risk of a potential reactor trip, testing of these valves during operation is not practical. Stroke time testing of the Main Feedwater Isolation Valves will be completed during cold shutdown, as conditions allow, in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-4

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2CV112B	Chemical And Volume Control	2	B
1/2CV112C	Chemical And Volume Control	2	B
1/2CV8105	Chemical And Volume Control	2	B
1/2CV8106	Chemical And Volume Control	2	B
1/2CV8152	Chemical And Volume Control	2	A
1/2CV8160	Chemical And Volume Control	2	A

Component Function(s)

The 1/2CV112B & C are the volume control tank outlet isolation/charging pump suction valves. The 1/2CV8105 and 1/2CV8106 are the normal charging path containment isolation valves. The 1/2CV8152 and the 1/2CV8160 are the letdown line containment isolation valves. These valves are part of the chemical and volume control system (CVCS).

Justification

Closure of these letdown and charging makeup valves 1/2CV112B/C, 1/2CV8105, 1/2CV8106, 1/2CV8152, and 1/2CV8160 during normal Unit operation would cause a loss of charging flow which would result in a reactor coolant inventory transient, and possibly, a subsequent reactor trip. Additionally, isolating letdown during normal Unit operation would result in a thermal transient on the charging nozzle. Valves 1/2CV8152 and 1/2CV8160 will be stroke time tested during cold shutdown in accordance with ISTC-3521(c) (also covers fail-safe tests for 1/2CV8152 and 1/2CV8160). As valves 1/2CV112B/C are the volume control tank outlet isolation/charging pump suction valves, they should not be closed while the charging pumps are running. As valves 1/2CV8105 and 1/2CV8106 are in the normal charging flow path, they should not be closed while the charging pumps are running. Valves 1/2CV112B/C, 1/2CV8105, and 1/2CV8106 will be exercised during Cold Shutdown when the charging pumps are not operating. They may not be tested during cold shutdowns if the charging pumps are not secured for sufficient duration to perform the tests. It is not the intent of this justification to require charging pump shutdown only to perform the exercise test for these valves. Valves 1/2CV112B/C, 1/2CV8105, and 1/2CV8106 will be tested during Cold Shutdown when the charging pumps are secured for sufficient duration to perform the tests, which is in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-5

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2RH8701A	Residual Heat Removal	1	A
1/2RH8701B	Residual Heat Removal	1	A
1/2RH8702A	Residual Heat Removal	1	A
1/2RH8702B	Residual Heat Removal	1	A

Component Function(s)

The 1/2RH8701A/B and 1/2RH8702A/B valves are the isolation boundary between the Residual Heat Removal Pumps and the Reactor Coolant System. The RH8701 valves isolate the "A" loop of the RCS from the "A" RHR pump suction. The RH8702 valves isolate the "C" loop of the RCS from the "B" RHR pump suction.

Justification

Opening one of these valves during Unit operation will leave only one valve isolating RHR from the high RCS pressure. This would place the plant in an undesirable and potentially unsafe condition. Therefore, these valves will be full stroke tested during cold shutdown, in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-6

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2RC014A	Reactor Coolant	1	B
1/2RC014B	Reactor Coolant	1	B
1/2RC014C	Reactor Coolant	1	B
1/2RC014D	Reactor Coolant	1	B

Component Function(s)

These are the reactor head vent valves and are used to vent the reactor of hydrogen or other post-accident gases.

Justification

The Reactor Pressure Vessel Vent Valves 1RC014A-D and 2RC014A-D cannot be stroked during Unit operation, as they provide a pressure boundary between the Reactor Coolant system and containment atmosphere. Failure of one of these valves in the open position would result in leaving only one valve as the high pressure boundary. These valves will be full stroke exercised and fail safe tested when the RCS pressure is at a minimum during cold shutdown, in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-7

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2RH8730A	Residual Heat Removal	2	C
1/2RH8730B	Residual Heat Removal	2	C

Component Function(s)

These are the RHR pump discharge check valves. The open function of these valves is to provide an RHR pump flow path. The closure function is to prevent back leakage while the opposite train is in operation during post-accident situations.

Justification

The Residual Heat Removal Pump discharge check valves 1/2RH8730A/B cannot be full stroke exercised during Unit operation due to the RCS pressure being greater than the RH pumps are capable of delivering. Since the RH pumps can not be run on full flow conditions during normal operation, the ability to not pass design accident flow through the subject check valves is not possible. Although not required, these check valves will be partial stroke tested, however, on a quarterly basis during the mini-flow recirculation RHR pump tests. The valves will be full stroke exercised during cold shutdown in accordance with ISTC-3522(b).

Additionally, it would be impractical to backflow test these valves during Unit operation. The methodology for testing these valves involves closing the mini-flow valve on the train being tested and having the opposite train provide pressure against the check valve being tested. The test is satisfied by verifying that the pump on the same train as the check valve is not rotating backwards. However, this testing would put the plant in an undesirable condition as both trains of RH would be considered inoperable. During cold shutdowns, the train running on shutdown cooling may be used to pressurize against the opposite train's check valve. For this reason, these valves will be backflow tested during cold shutdown in accordance with ISTC-3522(b).

COLD SHUTDOWN JUSTIFICATION: CS-8

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2SI8818A	Safety Injection	1	AC
1/2SI8818B	Safety Injection	1	AC
1/2SI8818C	Safety Injection	1	AC
1/2SI8818D	Safety Injection	1	AC
1/2SI8958A	Safety Injection	2	C
1/2SI8958B	Safety Injection	2	C

Component Function(s)

The SI8818 valves are the safety injection RCS Loop 1 cold leg upstream check valves located in the flow path from the Residual Heat Removal (RHR) pumps. The SI8958 valves are the safety injection RWST outlet check valves to the RHR pumps.

Justification

Due to the high RCS pressure during Unit operation (2235 psi), these valves cannot be full or partial stroke exercised during normal plant operations. The 1/2SI8958A/B check valves, although located at the suction of the RHR pumps, are not in the recirculation flow path to allow even partial stroking each quarter. These valves will be full stroke exercised during cold shutdown, in accordance with ISTC-3522(b).

COLD SHUTDOWN JUSTIFICATION: CS-9

(Page 1 of 1)

Component Number	System	Code Class	Category
2FW039A	Feed Water	2	B
2FW039B	Feed Water	2	B
2FW039C	Feed Water	2	B
2FW039D	Feed Water	2	B

Component Function(s)

These are the steam generator feedwater preheater bypass downstream isolation valves. They provide for Feedwater/Containment isolation in the closed position. They are normally open air operated valves located on the cross-tie lines connecting the main FW line to the tempering line.

Justification

It is not practical for the 2FW039A-D valves to be full or partial stroke tested during normal operation as closure of these valves would require a power reduction from full power to less than 80%. Stroking these valves closed above 80% would result in undesirable preheater tube vibrations within the Steam Generators. These valves will be stroke time and fail safe tested during cold shutdown, in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-10

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2CV459	Chemical And Volume Control	1	B
1/2CV460	Chemical And Volume Control	1	B

Component Function(s)

1/2CV459 & 1/2CV460 valves are normally OPEN with the Unit at power, allowing letdown flow to occur. The valves auto close on low Pressurizer level and on letdown isolation due to an interlock with the orifice isolation valves.

Justification

It is impractical to full or partial stroke exercise and stroke time the above listed valves on a quarterly basis. Due to the interlocks between the 1/2CV459, 1/2CV460, and the 1/2CV8149A-C valves, exercising these valves during normal operation results in total letdown flow isolation. The affect of a letdown isolation with the Unit at power is a thermal transient to the RPV charging nozzle. A letdown isolation also results in some amount of pressurizer level fluctuation until equilibrium letdown and makeup is re-established. While the piping and components are designed for thermal transients, each cycle presents some additional stress to all of the affected equipment. It is prudent to minimize the number of transients the equipment is required to undergo to prevent premature failures.

These valves will be full stroke exercised and failed safe tested in Cold Shutdowns in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-11

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2SI8801A	Safety Injection	2	B
1/2SI8801B	Safety Injection	2	B

Component Function(s)

These are the charging pumps to RCS cold leg isolation valves. They are required to open to provide a flow path for the high head safety injection portion of ECCS. They are required to close for containment isolation.

Justification

The High Head Injection Isolation Valves 1SI8801A/B and 2SI8801A/B cannot be stroke tested during Unit operation. These valves isolate the CV system from the RCS. Opening them during operation would enable charging flow to pass directly into the RCS, bypassing the regenerative heat exchanger. The temperature difference of the charging flow and the RCS could result in damaging thermal stresses to the cold leg nozzles as well as cause a reactivity change which would, in turn, cause a plant transient. These valves will be stroke time tested during cold shutdowns provided the charging pumps are shutdown. As a result, they may not be tested during cold shutdowns for which the charging pumps are required to be running. It is not the intent of this justification to require charging pump shutdown to perform the exercise test for these valves. These valves will be tested during cold shutdowns in which the charging pumps are secured for sufficient duration to perform the tests, which is in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-12

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2SI8802A	Safety Injection	2	B
1/2SI8802B	Safety Injection	2	B
1/2SI8806	Safety Injection	2	B
1/2SI8809A	Safety Injection	2	B
1/2SI8809B	Safety Injection	2	B
1/2SI8813	Safety Injection	2	B
1/2SI8835	Safety Injection	2	B
1/2SI8840	Safety Injection	2	B

Component Function(s)

The SI8802 valves are the Safety Injection to the Reactor Coolant System (RCS) hot leg (1A/1D, 1B/1C) isolation valves. The SI8806 valves are the A and B train SI pump suction isolation valves from the RWST. The SI8809 valves are the Residual Heat Removal (RHR) pumps to RCS cold leg isolation valves. The SI8813 valves are the SI pumps common mini-flow recirculation isolation valves. The SI8835 valves are the SI pumps cold leg isolation valves. The SI8840 valves are the RHR to RCS hot legs 1A/1D isolation valves.

Justification

The safety injection system Spurious Valve Actuation Group (SVAG) valves 1/2SI8802A/B, 1/2SI8806, 1/2SI8809A/B, 1/2SI8813, 1/2SI8835, and 1/2SI8840 cannot be stroke tested during Unit operation. These valves are required by the Technical Specifications to be de-energized in their proper positions during Unit operation. Stroking them would be a violation of the Technical Specifications as well as defeating the de-energized SVAG valve principle. These valves will be stroke tested during cold shutdown when they are not required to be de-energized. This is in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-13

(Page 1 of 2)

Component Number	System	Code Class	Category
1/2RH8701A	Residual Heat Removal	A	1
1/2RH8701B	Residual Heat Removal	A	1
1/2RH8702A	Residual Heat Removal	A	1
1/2RH8702B	Residual Heat Removal	A	1
1/2RH8705A	Residual Heat Removal	AC	2
1/2RH8705B	Residual Heat Removal	AC	2
1/2SI8815	Safety Injection	AC	1
1/2SI8818A	Safety Injection	AC	1
1/2SI8818B	Safety Injection	AC	1
1/2SI8818C	Safety Injection	AC	1
1/2SI8818D	Safety Injection	AC	1
1/2SI8819A	Safety Injection	AC	1
1/2SI8819B	Safety Injection	AC	1
1/2SI8819C	Safety Injection	AC	1
1/2SI8819D	Safety Injection	AC	1
1/2SI8841A	Safety Injection	AC	1
1/2SI8841B	Safety Injection	AC	1
1/2SI8900A	Safety Injection	AC	1
1/2SI8900B	Safety Injection	AC	1
1/2SI8900C	Safety Injection	AC	1
1/2SI8900D	Safety Injection	AC	1
1/2SI8905A	Safety Injection	AC	1
1/2SI8905B	Safety Injection	AC	1
1/2SI8905C	Safety Injection	AC	1
1/2SI8905D	Safety Injection	AC	1
1/2SI8948A	Safety Injection	AC	1
1/2SI8948B	Safety Injection	AC	1
1/2SI8948C	Safety Injection	AC	1
1/2SI8948D	Safety Injection	AC	1
1/2SI8949A	Safety Injection	AC	1
1/2SI8949B	Safety Injection	AC	1
1/2SI8949C	Safety Injection	AC	1
1/2SI8949D	Safety Injection	AC	1
1/2SI8956A	Safety Injection	AC	1
1/2SI8956B	Safety Injection	AC	1
1/2SI8956C	Safety Injection	AC	1
1/2SI8956D	Safety Injection	AC	1

COLD SHUTDOWN JUSTIFICATION: CS-13

(Page 2 of 2)

Component Function(s)

The listed valves have been identified as intersystem LOCA valves. Only the closed function of these valves will be addressed in this justification. These valves form a pressure boundary between the RCS and the other essential components in order to protect these components from damage.

Justification

All of these valves are considered pressure isolation valves (PIVs) per the Technical Specifications, except for the 1/2RH8705A/B valves, which will be tested on the same frequency since they are tested in conjunction with the 1/2RH8701/2 valves. The performance of the leak test also satisfies the closure exercise test required by the Code. These valves will be backflow/leak tested during cold shutdowns, in accordance with ISTC-3521(c) and ISTC-3522(b).

Additionally, pressure isolation valves are required to be tested in accordance with Technical Specification SR 3.4.14.1. The Technical Specification requires that if the Unit is in cold shutdown for 7 days or more and the valves have not been tested in the past nine months, they will be leak tested prior to entry into Mode 2.

1/2SI8948A-D; 1/2SI8956A-D Note

Valves 1/2SI8948A-D and 1/2SI8956A-D are now in the Condition Monitoring Program. Should they be removed from that program they would require being tested to the "regular," valve Code – ISTC, in accordance with this deferral. These valves are surveillance tested with the above valves, at a Cold Shutdown frequency, as they are required to be by the Technical Specifications. They will continue to be listed in this Cold Shutdown Justification for these reasons.

COLD SHUTDOWN JUSTIFICATION: CS-14

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2RH8716A	Residual Heat Removal	2	B
1/2RH8716B	Residual Heat Removal	2	B

Component Function(s)

Valves 1/2RH8716A/B are the Residual Heat Removal system cross connect valves that are required to be open to allow injection into all four RCS loops. Both A and B valves are required to be open for train operability of either train of RHR. The valves are required to be closed during cold leg recirculation and open during hot leg recirculation.

Justification

Technical Specifications require these valves to be open. Stroking either valve closed would make both trains of RH inoperable, which is a violation of the Technical Specification. They can only be exercised during cold shutdown or refuel. These valves will be stroke timed closed and open during cold shutdowns in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-15

(Page 1 of 2)

Component Number	System	Code Class	Category
1/2CC685	Component Cooling	2	A
1/2CC9413A	Component Cooling	2	A
1/2CC9414	Component Cooling	2	A
1/2CC9415	Component Cooling	3	B
1/2CC9416	Component Cooling	2	A
1/2CC9438	Component Cooling	2	A
1/2CV8100	Chemical & Volume Control	2	A
1/2CV8112	Chemical & Volume Control	2	A

Component Function(s)

Motor operated valves 1/2CC685 and 1/2CC9438 function in the closed position to provide a limited leakage barrier between the containment atmosphere and the environment during accident conditions. These valves open to provide a return flow path from the RCP Thermal Barrier.

Motor operated valves 1/2CC9413A are the component cooling water supply to RCP isolation valves. These valves must close to provide containment isolation. These valves open to supply component cooling water to the RCPs.

Motor operated valves 1/2CC9414 and 1/2CC9416 are the component cooling water return line from the RCPs isolation valves. These valves close to provide containment isolation. These valves open to provide a component cooling water return path from the RCPs.

Motor operated valves 1/2CC9415 are in the supply line to the RCPs and other non-essential Component Cooling Water loads. These valves may be closed to isolate non-essential loads from essential loads during accident conditions. Additionally, these valves may need to be reopened to cool the Excess Letdown HX to maintain control of pressurizer level during a post accident scenario.

Motor operated valves 1/2CV8100 and 1/2CV8112 must close to provide containment isolation. These valves open to provide a seal water return path from the RCPs.

Justification

These valves cannot be full or partial stroke exercised during normal operations because closure would isolate flow to the Reactor Coolant Pumps. Failure of one of the CC valves in a closed position during an exercise test would result in a loss of cooling flow to the pumps and eventual pump damage and/or trip. Failure of a CV valve in the closed direction would result in seal water return being diverted to the PRT by lifting a relief valve (1/2CV8121) upstream of the isolation valves. Therefore, these valves will be stroke tested during cold shutdowns, in accordance with ISTC-3521(c) provided all of the RCPs are shutdown. This test frequency will adequately maintain these valves in a state of operational readiness by testing them as often as safely possible.

COLD SHUTDOWN JUSTIFICATION: CS-15

(Page 2 of 2)

This frequency is consistent with the guidelines presented in NUREG-1482, Revision 1, Section 3.1.1.4.

COLD SHUTDOWN JUSTIFICATION: CS-16

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2SI8808A	Safety Injection	1	B
1/2SI8808B	Safety Injection	1	B
1/2SI8808C	Safety Injection	1	B
1/2SI8808D	Safety Injection	1	B

Component Function(s)

The 1/2SI8808A-D valves are Motor Operated Safety Injection Accumulator Discharge Isolation Valves. These valves are OPEN with Power Removed for Modes 1, 2, and 3 with Pressurizer Pressure above 1000 psig in accordance with the Technical Specifications. These valves were included in the IST Program for their need to be closed after all of the water in the Accumulator has been injected into the RCS. Closure of these valves would prevent injection of a Nitrogen bubble into the RCS. These valves are included in the IST Program as passive open and active to close.

Justification

Technical Specifications require the (Accumulator) isolation valves be open and power removed while in Modes 1, 2 or 3 (with pressurizer pressure above 1000 psig).

Since the Technical Specifications require these valves to be OPEN with power to their motor operators removed during periods when pressurizer pressure is above 1000 psig, the valves cannot be exercised every three months. In lieu of stroke time testing the valves every three months, these valves will be tested during heatup or cooldown (in the pressure transition between 800 and 1000 psig pressurizer pressure) or, they will be tested with the RCS depressurized and the associated accumulator vented and drained. This cold shutdown testing frequency is in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-17

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2CV8355A	Chemical And Volume Control	2	B
1/2CV8355B	Chemical And Volume Control	2	B
1/2CV8355C	Chemical And Volume Control	2	B
1/2CV8355D	Chemical And Volume Control	2	B

Component Function(s)

The CV8355 valves are Motor Operated Isolation valves in the seal injection line to the Reactor Coolant Pumps. Additionally, the CV8355s are designated Containment Isolation valves but are exempt from Local Leak Rate Testing of 10 CFR 50, Appendix J. The valves have no automatic closure function as part of Containment Isolation.

Justification

Reactor Coolant Pumps (RCPs) are required to be in operation in Mode 1, Power Operation. Seal injection flow must be maintained when the RCPs are running. Interruption of seal injection flow with the RCPs in operation, even for a short duration, is detrimental to the RCP seals. The above listed valves are Seal Injection Inlet valves and are designated Containment Isolation valves (CIVs).

The 1/2CV8355A-D valves are exempt from Local Leakage Rate testing of 10 CFR 50, Appendix J, but due to their designation as CIVs, they will be tested per OM Code in the closed direction. Due to the above, these valves will not be exercised during plant operation, but they will be exercised during Cold Shutdown when the RCPs are not running. Short duration forced outages to Cold Shutdown seldom require shutdown of RCPs as they are part of the normal heat removal loop. It is not the intent of this justification to require RCP shutdown only to perform the exercise tests for these valves. It is anticipated that these valves may not normally be tested more often than once per refueling outage. However, these valves will be tested during Cold Shutdowns in which the RCPs are secured for sufficient time to perform the tests, which is in accordance with ISTC-3521(c).

This frequency is consistent with the guidelines presented in NUREG-1482, Revision 1, Section 3.1.1.4.

COLD SHUTDOWN JUSTIFICATION: CS-18

(Page 1 of 2)

Component Number	System	Code Class	Category
1SD054A	Steam Generator Blowdown	2	B
1/2SD054B	Steam Generator Blowdown	2	B
1SD054C	Steam Generator Blowdown	2	B
1/2SD054D	Steam Generator Blowdown	2	B
1SD054E	Steam Generator Blowdown	2	B
1/2SD054F	Steam Generator Blowdown	2	B
1SD054G	Steam Generator Blowdown	2	B
1/2SD054H	Steam Generator Blowdown	2	B

Component Function(s)

The SD054 valves are normal Steam Generator Blowdown throttle control valves. An additional function of the Unit 1, (A through H valves) and the Unit 2, (B train valves [B, D, F, & H]) is to isolate Blowdown in the event of a High Energy Line Break (HELB) in the SD system.

Justification

It is impractical to exercise and stroke time the above listed valves on a quarterly basis. The valves have no Open / Closed handswitch. They are normally operated by means of a potentiometer which ultimately controls an air signal to a positioner. Attainment of repeatable stroke time results requires the valves to be stroked by causing (or simulating) HELB relay actuation. This method of closure causes multiple valve actuations resulting in complete steam generator blowdown isolation. Furthermore, the remote position indicator, (a 0-100% indicator - not based on limit switch operation) may lag actual valve position. Therefore the only repeatable method of stroke timing these valves involves stationing personnel locally at the valve(s) to witness actual valve movement.

COLD SHUTDOWN JUSTIFICATION: CS-18

(Page 2 of 2)

Personnel safety concerns exist with this stroking exercise during normal operation in that the valves are physically located in the Main Steam Isolation (MSIV) Valve Room, off the Steam Tunnel. This room contains the MSIVs, Feedwater Isolation Valves (FWIVs), Main Steam Safety Valves, Main Steam PORVs, and other miscellaneous piping and valves. The normal ambient temperature in this room with the Unit at power is greater than 110 °F. Almost all of the piping (most of which is insulated) and instrument tubing in the room are normally at temperatures of approximately 500 °F or more. The SD054 valves are located above the floor some 16 to 20 feet and are not visible from the floor being obscured by Main Steam and Feedwater Piping. Since personnel must be stationed locally at the valve to witness actual valve movement, it is necessary to climb around very hot piping in a hot and very noisy ambient atmosphere. In some cases it may be necessary to erect scaffolding to conduct this test with the Unit in normal operation.

Due to the above, these valves will be stroke time/fail safe tested during Cold Shutdowns of sufficient duration to allow safe access to the valves, including the erection of scaffolding, if required. This testing frequency is in accordance with ISTC-3521(c).

COLD SHUTDOWN JUSTIFICATION: CS-19

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2VQ001A	Containment Ventilation	2	A
1/2VQ001B	Containment Ventilation	2	A
1/2VQ002A	Containment Ventilation	2	A
1/2VQ002B	Containment Ventilation	2	A

Component Function(s)

The 1/2VQ001A/B valves are the containment purge supply isolation valves. The 1/2VQ002A/B valves are the containment purge exhaust isolation valves. They were designed to purge containment under normal shutdown conditions. The IST function of closure is for containment isolation.

Justification

The Primary Containment Purge Supply and Exhaust Valves, 1/2VQ001A/B and 1/2VQ002A/B, cannot be stroke time tested during Unit operation. These 48-inch valves are the only isolation points between the containment atmosphere and the environment. The Technical Specification Bases SR 3.6.3.1 requires motive power to these operators be removed in Modes 1 through 4. Administratively, these valves are maintained Out of Service Closed.

As a containment isolation valve, the closure function is considered to be operable. The valves are leak tested in accordance with Technical Specifications every 184 days, and a monthly verification is performed to verify that these valves are closed and power is removed. The monthly verification is completed by verifying the closed indication of the Group 6 monitor lights in the control room and that each power supply is off. However, if re-positioning this valve is necessary and the valve needs to be considered operable in association with exercising capabilities of it, then the IST stroke time testing and remote position indication testing will be completed prior to declaring the valve operable per ISTC-3570. It is anticipated that the necessary stroke time testing of these valves will be very infrequent, if at all, in the future.

Test Frequency

The 1/2VQ001A/B and 1/2VQ002A/B valves will be stroke time and fail safe tested during cold shutdowns, as necessary, to declare the valve exercising capabilities operable, in accordance with ISTC-3521(c) and ISTC-3570.