NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

DOCKET NUMBER: 50-244

FILE NUMBER:

TO: Mr. A. Schwencer

FROM: Rochester Gas & Electric Corp.
Rochester, New York
Keith W. Amish

DATE OF DOCUMENT: 8/4/77

DATE RECEIVED: 8/8/77

☑ LETTER ☐ ORIGINAL ☐ COPY ☐ NOTORIZED ☐ UNCLASSIFIED

PROP

INPUT FORM

NUMBER OF COPIES RECEIVED: 1 cc.

DESCRIPTION

ENCLOSURE

Attachment A: Response to questions from NRC on applicant's proposed Inservice Pump and Valve Testing Program.

Attachment B: Consists of a revised program, Appendix C, Revision 1, of the Quality Assurance Manual entitled "Ginna Station Inservice Pump and Valve Testing Program for the Sept. 1, 1977 through May 31, 1979 Period".

DO NOT REMOVE

PLANT NAME: Ginna Unit No. 1 (1-P) (29-P)

RJL 8/8/77

FOR ACTION/INFORMATION

SAFETY		ENVIRONMENTAL	
ASSIGNED AD:		ASSIGNED AD:	V. MOORE (LTR)
✓ BRANCH CHIEF: (7)	SCHWENCER	BRANCH CHIEF:	
~~PROJECT MANAGER:~~		PROJECT MANAGER:	
~~LICENSING ASSISTANT:~~		LICENSING ASSISTANT:	
		B. HARLESS	

INTERNAL DISTRIBUTION

✓ REG FILES	SYSTEMS SAFETY	PLANT SYSTEMS	SITE SAFETY &
✓ NRC PDR	HEINEMAN	TEDESCO	ENVIRON ANALYSIS
✓ I & E (2)	SCHROEDER	BENAROYA	DENTON & MULLER
✓ OELD		LAINAS	CRUTCHFIELD
✓ ~~COSTICK & STAFF~~	ENGINEERING	IPPOLITO	
✓ HANAUER	KNIGHT	F. ROSA	ENVIRO TECH.
MIPC	BOSNAK		ERNST
CASE	SIHWELL	OPERATING REACTORS	BALLARD
BOYD	PAWLICKI	STELLO	YOUNGBLOOD
		✓ EISENHUT	
PROJECT MANAGEMENT	REACTOR SAFETY	✓ SHAO	~~SITE TECH.~~
SKOVHOLT	ROSS	✓ BAER	
P. COLLINS	NOVAK	✓ BUTLER	GAMMILL (2)
HOUSTON	ROSZTOCZY	✓ GRIMES	
MELTZ	✓ CHECK		SITE ANALYSIS
HELTEMES			VOLLMER
SK	AT&I		BUNCH
	SALTZMAN		✓ J. COLLINS
	RUTBERG		KREGER

EXTERNAL DISTRIBUTION

✓ LPDR:		
✓ TIC	✓ NSIC	
NAT LAB		
REG IV (J. HANCHETT)		
✓ 16 CYS ACRS SENT CATEGORY B		

CONTROL NUMBER: 772200244 B

NRC FORM 195 (2-76)

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649

KEITH W. AMISH
EXECUTIVE VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

REGULATORY DOCKET FILE COPY

August 4, 1977

RECEIVED AUG 8 1977 U.S. NUCLEAR REGULATORY COMMISSION

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Operating Reactors Branch #1
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Inservice Pump and Valve Testing Program
R. E. Ginna Nuclear Power Plant, Unit #1
Docket No. 50-244

Gentlemen:

This letter is in response to questions from members of your staff on our proposed Inservice Pump and Valve Testing Program as submitted by our letter of April 6, 1977. Our responses to the questions are presented in Attachment A to this letter. In addition, as a result of our review in preparation of the responses, the need for several other changes became apparent. These changes are also described in Attachment A. A revised program, Appendix C, Revision 1, of the Ginna Station Quality Assurance Manual entitled "Ginna Station Inservice Pump and Valve Testing Program for the September 1, 1977 through May 31, 1979 Period" is presented in Attachment B for your information. Forty (40) copies of this letter and the Attachments are provided for your use.

Very truly yours,

Keith W. Amish

Keith W. Amish

Attachments

772200244

Attachment A

Response to NRC Questions

1. Provide additional information to describe exactly why the service water system will not allow a reference flow rate to be established and subsequent flow rate measurements to be taken at the same condition and compared to the reference value.

   We have reviewed the testing methods and have determined that the service water pumps can be tested monthly.

2. One of the Section XI requirements is to measure the maximum valve stroke time of power operated category A and B valves. The pump and valve testing program for Ginna does not address this requirement. Indicate whether you intend to meet this requirement and if so, you should incorporate it into the program submittal.

   Stroke time for power operated category A and B valves will be timed during each test by means of switch initiation and indication lights on the main control board. During testing in refueling conditions, physical verification of stem position will be confirmed in addition to the timing. Use of the switch initiation and indication lights will provide accurate times since there are no inherent time delays built into the electronic circuitry.

3. Article IWV of Section XI requires valve testing at cold shutdown intervals when testing during normal operation might compromise plant safety. Provide justification for testing at refueling intervals rather than at cold shutdown intervals, for each category A and B and category C check valves, where refueling intervals are specified as the test frequency in the valve test program.

   Refueling intervals were specified instead of cold shutdown because cold shutdowns occur only infrequently between refueling outages and are usually of too short duration for the required tests to be performed. It was not felt to be warranted to require an extension of a cold shutdown, solely for the purpose of completing a valve testing program when no such testing would have been required had there not been that cold shutdown. It has been estimated that it would require approximately four days to complete all tests which must be performed at cold or refueling shutdown, assuming there are no other significant demands on testing personnel during that time and that systems that contain radioactive fluid and must be drained for testing

can be promptly drained. Because there exists a possibility for an extended cold shutdown at a time when these valves are due to be tested, i.e., after the quarter has expired, test personnel will attempt to have completed all required tests if a cold shutdown extends to more than four days. For cold shutdowns of lesser duration, a lesser number of valves will be tested. For very short cold shutdowns, it is expected that no valves would be tested due to the length of time that is required to notify the required personnel and initiate a testing program under proper procedural control.

4. Provide justification for testing valve 427 at refueling intervals instead of at 3 month intervals as required by Article IWV of Section XI.

   Testing valve 427 during normal plant operation would interrupt the letdown (CVCS) system flow. "Note 3" should be entered in the "Note" column for valve 427.

5. Provide information to justify why an exercising test cannot be performed on valves 878G and J during normal operation by observing the flow or monitoring the pressure at the flanged drain or test line located downstream of these valves.

   Valves 878G and J could be tested during normal operation by starting a safety injection pump and pressurizing the affected portion of piping to greater than the accumulator pressure (greater than 700 psig). Drain valves 2844 or 2835 could then be opened and flow or pressure monitored at the flanged drain. The drain valve could then be closed and the safety injection pump shut down. Several difficulties present themselves with this test. First, care must be taken so that the accumulator is not discharged through the drain line. Secondly, a distinct possibility exists that in the process of opening the drain valve, the seat will be cut. Although a swage lock fitting exists downstream of the drain valve, it is not intended to be the system boundary. Repairs to the drain valve could not be accomplished without isolating the associated accumulator. In addition, if a safety injection were to occur during the time the drain valve was open, some of the water assumed to inject into the reactor vessel would be lost through the drain valve.

6. Valves 878F and 878H are identified in the relief request basis but are not listed in the program text. Provide information to clarify whether you intend to test these valves or to ask for relief from the Section XI requirements.

   Valves 878F and 878H, check valves in the safety injection lines to the reactor hot legs, have no safety function since hot leg safety injection is never required. The valves were inadvertently added to a note in the relief basis and have been removed.

7. Relief from testing valves 866A and 866B, is requested because a flow test would douse the charcoal filters and render them inoperable. Provide a description of the exact safety related function of these valves and the consequences of their failure to operate within their design function. What other methods of determining valve operability have you considered?

   The safety function of post accident charcoal filter dousing system is described in Section 6.3 of the Ginna FSAR. In the event of a Design Basis Accident which releases radioactive material to containment, the containment fan-coolers would supply containment atmosphere to the post accident charcoal filters. If, after some period of operation, the fan-cooler supplying a post accident charcoal filter were to fail, forced flow through the filter would cease. Fission products deposited on the filter would cause the filter to begin to slowly heat up. As described in the FSAR, however, loss of a fan motor would not result in ignition of the charcoal. Ignition could be prevented by backflow induced by the other fans. The dousing system is, therefore, an additional means of ensuring that even if ignition were to occur, a fire could be extinguished.

   The check valves 866A and 866B cannot be tested by supplying water to the line since such a test would require actuation of containment spray, and would result in borated water being sprayed throughout containment. It would also result in borated water being trapped at the motor operated valves above the filter dousing system spray nozzles which could result in degradation of the piping or valves. A test could be performed by supplying air to the open containment spray ring header. However, at this time there is no instrumentation provided which would provide the data needed to ensure check valve operability. Because the dousing system might be required to perform a safety function, the dousing system piping will be modified to enable testing of the two check valves. Because of the long lead times for

equipment, such as valves, which is qualified for a seismic category I system, it is unlikely that such a modification can be accomplished at our spring 1978 refueling outage. We will, however, install the necessary modifications during the spring 1979 outage and will commence the required testing at that time. Thus valves 866A and 866B have been added to category C of the program.

8. Provide information to identify the redundant isolation valves that serve the same isolation function as valves 528 and 529. Identify whether you intend to test these valves or to ask for relief from the code requirements.

   There is no redundant valve serving the same isolation function as valve 528. This configuration is fully described in the Ginna FSAR in Section 5.2 (see page 5.2.2-1, Table 5.2.2-1, and Figure 5.2.2-1). The redundant valve for valve 529 is valve 508, which is presently included in the program.

9. Relief is requested for valve 383B of the cvcs system (Drawing No. 33013-433C) from the exercising test requirement during normal plant operation because of a thermal shock consideration. Provide information to justify that the test connection, shown in the drawing 33013-433C, cannot be used to test this valve.

   The test connection shown in drawing 33013-433C could be used to test valve 383B and avoid thermal shock to the inlet nozzle in the primary loop. However, use of this test connection during normal plant operation would result in radiation exposure to test personnel which is not warranted. A recent survey in the vicinity of the test connection for valve 383B indicated a neutron field of 500 mr/hr and a gamma field of 250 mr/hr. Each test could require one to perhaps two hours in this environment. Thus, it is proposed that testing of valve 383B not be required during plant operation.

10. Relief is requested for valve 351 of the cvcs system (Drawing No. 33013-433C) from the exercising test requirement during normal plant operation because of the potential for the boric acid solution setting up. Provide additional information, in detail, to clarify this request for relief including approximate times involved for the solution to set up and the conditions which would cause this event. Also why the normal flushing system cannot be used following a test to prevent the boric acid solution from setting up.

Valve 351 is not required to perform a safety function, should not have been included in the program and therefore has been removed. The immediate borate function is an operator initiated procedure which may be used to rapidly borate the primary system. However, its functioning has not been assumed in the safety analysis. In addition, for the same reasons, valve 350 should be deleted.

Additional Changes

During the preparation of the above responses, it became apparent that several other changes should be made in the program. These are enumerated below:

1. Valves 841 and 865, isolation valves in the accumulator dump lines, should be deleted from the program. In accordance with Technical Specification 3.3.1.1.g, these valves are disabled in the open position. They are not required to be closed to perform a safety function. During a normal plant shutdown to cold shutdown, without safety injection, the valves are closed to prevent unnecessary discharge of the accumulators to the primary system.

2. Valves 878B and 878D, motor operated valves on the safety injection lines to the cold legs, should be deleted. In accordance with Technical Specification 3.3.1.1.g, these valves are disabled in the open position. They are not required to be closed to perform a safety function.

3. Valve 879, a manual valve in the safety injection test line, is not required to change position to perform a safety function. The only requirement is that leakage through valve 879 be acceptably low. Therefore, the quarterly stroke test requirement for valve 879 has been deleted.

4. Valves 1816A and 1816B, manual valves in the supply line from the 1A RHR heat exchanger to the 1C safety injection pump, should be deleted. This line provides additional paths for water for high head recirculation, but is not assumed to be operable in any of the plant safety analyses. Therefore, it is not required to perform any function to mitigate the consequences of an accident.

5. Valves 780A and 780B, manual butterfly valves in the component cooling water supply to the RHR heat exchangers, should be deleted. These valves were provided to balance the flow to the RHR heat exchangers. They are now pinned in place and are not required to change position or serve any safety function.

6. Power operated relief valves 430 and 431C should be deleted inasmuch as they are not required to perform a safety function. They are provided only to avoid operation of the pressurizer safety valves.

7. Three valves, 896A and B and 856, are in the supply lines for the safety injection system from the refueling water storage tank. In accordance with Technical Specification 3.3.1.1.g, all three are locked in the open position. At present, Technical Specification 4.5.2.2.a requires that these valves be tested at least once per month. However, since failure of any of the valves in a closed position would prevent water from being supplied to the safety injection pumps (896A or B) or to the residual heat removal pumps (856), it is proposed that the pump and valve testing program only require testing at cold/refueling shutdowns. In addition, a Technical Specification change will be requested which would either delete this testing requirement from the Technical Specifications or make the Technical Specifications consistent with the pump and valve testing program. This change will be submitted by September 20, 1977.

   Valves 825A and B are required to open during safety injection after the water level in the boric acid tanks reaches a low level setpoint. If either 825A or B were open at the time of a safety injection signal, an open path would exist between the refueling water storage tank and the boric acid tanks. This would result in overflowing the boric acid tanks and loss of that tank's 12 percent boric acid solution. Therefore, it is proposed that these valves be tested only during cold/refueling shutdowns.

8. Air piston valves 5871, 5872, 5873, 5874, 5875, and 5876, containment post accident charcoal filter isolation valves, should be added to category B of the valve testing program. These valves are required to open on a safety injection signal and would provide for containment air flow from containment fan-coolers to containment post accident charcoal filters.

9. Air piston valves 81, 82, 83, 84, 85 and 86, control room ventilation isolation valves, should be added to category B of the program. These valves are required to operate on a high radiation signal in the control room ventilation system so that doses to control room personnel following a design basis accident are maintained acceptably low.

10. Air piston valves 5869, 5870, 5878 and 5879, containment purge isolation valves, should be added to category A of the program. These valves are required to operate on receipt of a safety injection signal.

QUALITY ASSURANCE MANUAL	SECT. NO. –	REV. 1	PAGE 1 OF 23
ROCHESTER GAS & ELECTRIC CORPORATION GINNA STATION	EFFECTIVE DATE: September 1, 1977		
		SIGNATURE	DATE
	PREPARED BY:	[illegible]	8/1/77
TITLE: APPENDIX C Ginna Station Inservice Pump and Valve Testing Program for the September 1, 1977 Through May 31, 1979 Period	REVIEWED BY:	RC Mecredy	8/4/77
	APPROVED BY:	CR Anderson	8/4/77

Program Table of Contents

Introduction: Discussion

Definitions:

Program:

PVT 1.0 Scope and Responsibility

PVT 2.0 Code Edition and Testing Interval

PVT 3.0 Inservice Pump Testing Program

PVT 4.0 Inservice Valve Testing Program

PVT 5.0 Records

Introduction

This appendix to the Quality Assurance Manual defines the Inservice Pump and Valve Testing Program for the twenty month period starting September 1, 1977 through April 30, 1979. Included in this program are the Quality Groups A, B and C Pumps which are provided with an emergency power source and those Quality Groups A, B and C Valves which are required to shut down the reactor or to mitigate the consequences of an accident and maintain the reactor in a safe shutdown condition.

This program has been developed as required by Section 50.55(a)(g) of 10CFR50 following the guidance of the ASME Boiler and Pressure Vessel Code Section XI - "Rules for Inservice Inspection of Nuclear Power Plant Components," (hereafter referred to as the "Code") excluding the controls of the Authorized Inspector, Enforcement Authority, Reporting Systems and N-Stamp Symbol. The inservice testing program shall be controlled by the Ginna Station Quality Assurance Program for Station Operation. Quality Groups A, B and C components correspond to those defined in NRC Regulatory Guide 1.26.

Further addenda and editions of Section XI of the Code shall be used for clarification of test requirements and performance.

The Inservice Pump and Valve Testing Program does not affect the pump and valve surveillance program required by Technical Specifications. Technical Specification requirements shall continue to be implemented at the required frequency.

Definitions

AFP - Auxiliary Feedwater Pumps
AOV - Air Operated Valve
APV - Air Operated Piston Valve
BA - Boric Acid
Code - American Society of Mechanical Engineers Boiler and Pressure Vessel Code
CC - Component Cooling
CK - Check
CS - Containment Spray
CSP - Containment Spray Pump
CV - Check Valve
C/R - Cold Shutdown or Refueling
ECCS - Emergency Core Cooling System
FCV - Flow Control Valve
GA - Gas Analyzer
GDT - Gas Decay Tank
HCV - Hand Control Valve
HX - Heat Exchanger
LCV - Level Control Valve
MDAFP - Motor Driven Auxiliary Feedwater Pump
MOV - Motor Operated Valve
MV - Manual Valve
PCV - Pressure Control Valve
PIV - Primary Isolation Valve
PRT - Pressurizer Relief Tank
PVT - Pump and Valve Testing
Q - Quarterly
R - Refueling Outage
RCDT - Reactor Coolant Drain Tank
RCP - Reactor Coolant Pump
RCV - Radiation Control Valve
RHR - Residual Heat Removal
RMW - Reactor Makeup Water
RV - Relief Valve
RWST - Refueling Water Storage Tank
RX - Reactor Vessel
S/G - Steam Generator
SI - Safety Injection
SIV - Secondary Isolation Valve
SW - Service Water
TDAFP - Turbine Driven Auxiliary Feed Pump
TK - Tank
VC - Volume Control
VCT - Volume Control Tank
VH - Vent Header

Pump and Valve Testing Program

PVT 1.0 **Scope and Responsibility**

1.1 The inservice testing program defines the testing program for Quality Groups A, B and C Pumps and Valves in accordance with the requirements of Articles IWP and IWV of Section XI of the Code. The results of these tests are to assure the operational readiness of pumps and valves.

1.2 It is the responsibility of the Ginna Station Test and Results Engineer to implement this test program and develop inservice test procedures which will outline the specific test for each pump and valve included in the program.

1.3 After preventative or corrective maintenance the affected pumps or valves shall be tested to reestablish any reference values and assure operability.

PVT 2.0 **Code Edition and Testing Interval**

2.1 The Inservice Pump and Valve Testing Program for the twenty (20) month period starting September 1, 1977 through April 30, 1979 was developed utilizing the 1974 Edition of Section XI of the Code through the Summer 1975 Addenda.

PVT 3.0 **Inservice Pump Testing Program**

3.1 The Inservice Pump Testing Program was developed in accordance with the requirements of Article IWP of Section XI of the Code. This program includes all Quality Group A, B and C pumps which are provided with an emergency power source and are required to safely shut down the reactor or to mitigate the consequences of an accident and maintain the reactor in a safe shutdown condition.

3.2 The following pumps shall be tested in accordance with Article IWP of Section XI:

(a) 1A Component Cooling
(b) 1B Component Cooling
(c) 1A Safety Injection
(d) 1B Safety Injection
(e) 1C Safety Injection
(f) 1A Residual Heat Removal
(g) 1B Residual Heat Removal
(h) 1A Containment Spray
(i) 1B Containment Spray
(j) 1A Auxiliary Feed
(k) 1B Auxiliary Feed
(l) Turbine Driven Auxiliary Feed
(m) 1A Service Water
(n) 1B Service Water
(o) 1C Service Water
(p) 1D Service Water

3.3 Flow rates will not be accurate for the residual heat removal pumps because the bypass test loop can only pass 200 gpm. This bypass test loop is a fixed resistance system; therefore, hydraulic resistance remains unchanged from test to test.

PVT 4.0 <u>Inservice Valve Testing Program</u>

4.1 The Inservice Valve Testing Program was developed in accordance with the requirements of Article IWV of Section XI of the Code. All those valves that are required to perform a safety function either to shut down the reactor or to mitigate the consequences of an accident and maintain the reactor in a safe shutdown condition are included in the program.

4.2 The Inservice Valve Testing Program Requirements for Category A and B Valves are found in Tables PVT 4.7 and 4.8, respectively. Category C Valves are broken down into two categories, Check Valves and Relief Valves, which are found in Tables PVT 4.9 and 4.10, respectively. Category D Valves are not included in this testing program because there are none included in Ginna Station design. Category E Valves are not listed because there are not any applicable testing requirements. During operation Category E Valves are monitored to verify that they are locked.

4.3 Some exceptions and exemptions to the testing requirements of Article IWV have been taken based on operational interference, placing the plant in an unsafe condition and Technical Specification requirements. All exceptions and exemptions are listed on the valve tables and explained in the referenced notes, PVT 4.11.

4.4 The exercising program for Category A and B Valves, with the exception of check valves, shall require a complete stroking of each valve per the valve testing tables. All check valves, including Category C Valves, shall be exercised to the position required to fulfill their function. These functional tests shall be verified by the operation of the required system.

4.5 Category A and B valves operation shall be timed each time they are stroked utilizing switch initiation and the position indicators, which are accessible during plant operation. During each refueling outage a visual verification shall be made to confirm direct correspondence between valve operators and the position indicators.

4.6 The testing of valves required at cold shutdown or refueling outages will normally take four (4) days to complete. When cold shutdowns are of a shorter duration, test personnel shall attempt to test as many valves as possible without holding up the start-up of the unit. For very short cold shutdowns, it would be impossible to mobilize test personnel to implement the testing program under the required procedural controls, therefore no valves would be tested. It is possible that, during a four (4) day cold shutdown, the work load on test personnel may preclude their completion of all the required valve tests prior to startup. Valve testing during cold shutdowns shall not be more frequent than one test per quarter for each valve in the test program.

4.7 Category A Valves

Valve #	Type	Description	Note	Test	Freq
304A	CV	1-A RCP Seal Injection Check	1	Stroke Leak	C/R R
304B	CV	1-B RCP Seal Injection Check	1	Stroke Leak	C/R R
313	MOV	Seal Water Return Isolation	1	Stroke Leak	C/R R
370B	CV	Charging Line Isolation Valve	2	Stroke Leak	C/R R
371	AOV	Letdown Isolation	3	Stroke Leak	C/R R
383B	CV	Alternate Charging Line Check	4	Stroke Leak	C/R R
508	AOV	RMW to Containment Vessel Stop	-	Stroke Leak	Q R
528	CV	N_2 Supply to PRT	-	Stroke Leak	Q R
529	CV	RMW to PRT	-	Stroke Leak	Q R
539	AOV	PRT Stop Valve to Gas Analyzer	-	Stroke Leak	Q R
743	CV	CC From Excess Letdown HX.	-	Stroke Leak	Q R
745	AOV	CC Return From Excess Letdown HX.	-	Stroke Leak	Q R
750A	CV	CK CC to A RCP	5	Stroke Leak	C/R R
750B	CV	CK CC to B RCP	5	Stroke Leak	C/R R

Valve #	Type	Description	Note	Test	Freq
759A	MOV	Containment Stop CC From Loop A RCP	5	Stroke Leak	C/R R
759B	MOV	Containment Stop CC From Loop B RCP	5	Stroke Leak	C/R R
813	MOV	Supply CC to RX Support Cooling	6	Stroke Leak	C/R R
814	MOV	Return CC to RX Support Cooling	6	Stroke Leak	C/R R
846	AOV	N_2 Supply to Accumulators	-	Stroke Leak	Q R
862A	CV	1-A CSP Disch Check	-	Stroke Leak	Q R
862B	CV	1-B CSP Disch Check	-	Stroke Leak	Q R
870A	CV	1-A to 1-C SI Pump Disch Check	-	Stroke Leak	Q R
870B	CV	1-B to 1-C SI Pump Disch Check	-	Stroke Leak	Q R
879	MV	SI Test Line Isolation	7	Stroke Leak	- R
889A	CV	1-A SI Pump Disch Check	-	Stroke Leak	Q R
889B	CV	1-B SI Pump Disch Check	-	Stroke Leak	Q R

Valve #	Type	Description	Note	Test	Freq
966A	AOV	Pressurizer Steam Space VC	-	Stroke Leak	Q R
966B	AOV	Pressurizer Liquid Space VC Isolation Valve	-	Stroke Leak	Q R
966C	AOV	Loop A and B Hot Leg VC Isolation Valve	-	Stroke Leak	Q R
1003A	LCV	1-A RCDT Pump Suction	-	Stroke Leak	Q R
1003B	LCV	1-B RCDT Pump Suction	-	Stroke Leak	Q R
1713	CV	N_2 to RCDT CV	-	Stroke Leak	Q R
1721	AOV	Suction line to RCDT	-	Stroke Leak	Q R
1723	AOV	A Containment Sump Disch Stop Valve to Waste Holdup Tank	-	Stroke Leak	Q R
1728	AOV	A Containment Sump Disch Stop Valve to Waste Holdup Tank	-	Stroke Leak	Q R
1786	AOV	SIV RCDT to VH	-	Stroke Leak	Q R
1787	AOV	PIV RCDT to VH	-	Stroke Leak	Q R
1789	AOV	ISO Valve Outlet RCDT to GA	-	Stroke Leak	Q R

Valve #	Type	Description	Note	Test	Freq
5869	APV	Containment Purge Supply Isolation	-	Stroke Leak	Q R
5870	APV	Containment Purge Supply Isolation	-	Stroke Leak	Q R
5878	APV	Containment Purge Exhaust Isolation	-	Stroke Leak	Q R
5879	APV	Containment Purge Exhaust Isolation	-	Stroke Leak	Q R

4.8 Category B Valves

Valve #	Type	Description	Note	Test	Freq
014	RCV	Aux Building GDT Release	-	Stroke	Q
017	RCV	Comp Cool Surge TK Vent	-	Stroke	Q
081	APV	Control Room Ventilation Damper	-	Stroke	Q
082	APV	Control Room Ventilation Damper	-	Stroke	Q
083	APV	Control Room Ventilation Damper	-	Stroke	Q
084	APV	Control Room Ventilation Damper	-	Stroke	Q
085	APV	Control Room Ventilation Damper	-	Stroke	Q
086	APV	Control Room Ventilation Damper	-	Stroke	Q
112B	LCV	Emergency Makeup RWST to Charging Pump	-	Stroke	Q
112C	LCV	VCT Outlet	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
427	AOV	Letdown From Loop B	3	Stroke	C/R
624	HCV	1-B R HR HX Outlet	-	Stroke	Q
625	HCV	1-A R HR HX Outlet	-	Stroke	Q
626	FCV	RHR Loop Return	-	Stroke	Q
700	MOV	Suction Stop From Loop A to RHR Pumps	8	Stroke	C/R
701	MOV	Suction Stop From Loop B to RHR Pumps	8	Stroke	C/R
704A	MOV	Suction 1-A RHR Pump	-	Stroke	Q
704B	MOV	Suction 1-B RHR Pump	-	Stroke	Q
720	MOV	Motor Operation Pump Disch to RHR Pumps	8	Stroke	C/R
721	MOV	Motor Op 10" Disch to B Loop From RHR Pumps	8	Stroke	C/R
723A	CV	Discharge Check Valve 1-A CC Pump	-	Stroke	Q
723B	CV	Discharge Check Valve 1-B CC Pump	-	Stroke	Q
738A	MOV	CC to 1-A RHR HX	-	Stroke	Q
738B	MOV	CC to 1-B RHR HX	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
825A	MOV	SI Pump Suction From RWST	9	Stroke	C/R
825B	MOV	SI Pump Suction From RWST	9	Stroke	C/R
826A	MOV	SI Pump Suction From BA Tank	-	Stroke	Q
826B	MOV	SI Pump Suction From BA Tank	-	Stroke	Q
826C	MOV	SI Pump Suction From BA Tank	-	Stroke	Q
826D	MOV	SI Pump Suction From BA Tank	-	Stroke	Q
836A	HCV	Spray Additive Tank Discharge	-	Stroke	Q
836B	HCV	Spray Additive Tank Discharge	-	Stroke	Q
850A	MOV	Sump B to RHR Pumps	-	Stroke	Q
850B	MOV	Sump B to RHR Pumps	-	Stroke	Q
851A	MOV	In Sump B to RHR Pumps	-	Stroke	Q
851B	MOV	In Sump B to RHR Pumps	-	Stroke	Q
852A	MOV	RHR Pump to RX Vessel	-	Stroke	Q
852B	MOV	RHR Pumps to RX Vessel	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
856	MOV	RWST to RHR Pumps	9	Stroke	C/R
857A	MOV	Isolate #1 RHR HX From CS and SI Pumps	-	Stroke	Q
857B	MOV	Isolate #2 RHR HX From CS and SI Pumps	-	Stroke	Q
857C	MOV	Isolate #1 RHR HX From CS and SI Pumps	-	Stroke	Q
860A	MOV	Parallel Discharge MOV From 1-A CSP	-	Stroke	Q
860B	MOV	Parallel Discharge MOV From 1-A CSP	-	Stroke	Q
860C	MOV	Parallel Discharge MOV From 1-B CSP	-	Stroke	Q
860D	MOV	Parallel Discharge MOV From 1-B CSP	-	Stroke	Q
871A	MOV	1-A to 1-C SI Pump Discharge	-	Stroke	Q
871B	MOV	1-B to 1-C SI Pump Discharge	-	Stroke	Q
875A	MOV	Parallel MOV From CS Pumps to Charcoal Filter Deluge	-	Stroke	Q
875B	MOV	Parallel MOV From CS Pumps to Charcoal Filter Deluge	-	Stroke	Q
876A	MOV	Parallel MOV From CS Pumps to Charcoal Filter Deluge	-	Stroke	Q
876B	MOV	Parallel MOV From CS Pumps to Charcoal Filter Deluge	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
896A	MOV	RWST to CS and SI Pumps	9	Stroke	C/R
896B	MOV	RWST to CS and SI Pumps	9	Stroke	C/R
1815A	MOV	C-SI Pump Suction From RWST	-	Stroke	Q
1815B	MOV	C-SI Pump Suction From RWST	-	Stroke	Q
3504	MOV	Main Steam to AFP From 1-B S/G Remote Valve	-	Stroke	Q
3505	MOV	Main Steam to AFP From 1-A S/G Remote Valve	-	Stroke	Q
3652	MV	Main Steam Throttle Valve to TDAFP	-	Stroke	Q
3996	MOV	TDAFP Discharge Valve	-	Stroke	Q
4000A	MOV	Cross Over Valve For MDAFP	-	Stroke	Q
4000B	MOV	Cross Over Valve For MDAFP	-	Stroke	Q
4000C	CV	1A MDAFP Discharge Check Valve Downstream MOV-4007	-	Stroke	Q
4000D	CV	1B MDAFP Discharge Check Valve Downstream MOV-4008	-	Stroke	Q
4007	MOV	1-A MDAFP Discharge Valve	-	Stroke	Q
4008	MOV	1-B MDAFP Discharge Valve	-	Stroke	Q
4013	MOV	TDAFP Service Water Supply Isolation Valve	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
4027	MOV	1-A MDAFP Service Water Isolation Valve	-	Stroke	Q
4028	MOV	1-B MDAFP Service Water Isolation Valve	-	Stroke	Q
4098	MV	Service Water Supply Isolation to TDAFP	-	Stroke	Q
4291	AOV	TDAFP Recir. Line	-	Stroke	Q
4297	AOV	AFW Reg. Discharge Valve to 1-A S/G	-	Stroke	Q
4298	AOV	Aux. FW Reg. Valve Discharge to 1-B S/G	-	Stroke	Q
4304	AOV	1-A MDAFP Recirculation Cont. Valve	-	Stroke	Q
4310	AOV	1-B MDAFP Recirculation Containment Valve	-	Stroke	Q
4561	AOV	Containment Vent Recirc. Fans Discharge Flow Control Valve	-	Stroke	Q
4562	AOV	Containment Vent Recirc. Fans Discharge Flow Control Bypass Valve	-	Stroke	Q
4609	MOV	1-A1 Intake Screen Wash Isolation Valve	-	Stroke	Q
4613	MOV	1-B2 Turbine Building SW Isolation Valve	-	Stroke	Q
4614	MOV	1-A1 Turbine Building SW Isolation Valve	-	Stroke	Q
4615	MOV	1-B1 Aux. Building SW Isolation Valve	-	Stroke	Q

Valve #	Type	Description	Note	Test	Freq
4616	MOV	1-A1 Aux. Building SW Isolation Valve to CC HX	-	Stroke	Q
4663	MOV	Air Condition Chillers SW Isolation Valve 1-A1	-	Stroke	Q
4664	MOV	Turbine Building SW Isolation Valve 1-A2	-	Stroke	Q
4670	MOV	Turbine Building SW Supply Isolation Valve 1-B1	-	Stroke	Q
4733	MOV	Air Cond. Chillers SW Isolation Valve 1-A2	-	Stroke	Q
4734	MOV	Aux. Build. SW Isolation Valve 1-B2	-	Stroke	Q
4735	MOV	Aux. Build. SW Isolation Valve 1-A2	-	Stroke	Q
4780	MOV	Condenser Circulation Pump Seal Isolation Valve	-	Stroke	Q
5171	MOV	Turbine Build. Fire Water Loop Supply Isolation Valve	-	Stroke	Q
5871	APV	Containment Post Accident Filter Damper	-	Stroke	Q
5872	APV	Containment Post Accident Filter Damper	-	Stroke	Q
5873	APV	Containment Post Accident Filter Damper	-	Stroke	Q
5874	APV	Containment Post Accident Filter Damper	-	Stroke	Q
5875	APV	Containment Post Accident Filter Damper	-	Stroke	Q
5876	APV	Containment Post Accident Filter Damper	-	Stroke	Q

4.9 Category C Check Valves

Valve #	Type	Description	Note	Test	Freq
710A	CV	Check Discharge 1-A RHR Pump	-	Stroke	Q
710B	CV	Check Discharge 1-B RHR Pump	-	Stroke	Q
723A	CV	Discharge Check Valve 1-A CC Pump	-	Stroke	Q
842A	CV	First Check Valve in Loop A Accumulator Dump Line	-	Stroke	Q
842B	CV	First Check Valve in Loop B Accumulator Dump Line	-	Stroke	Q
847A	CV	A-CSP From Spray Additive Tank to Eductor	-	Stroke	Q
847B	CV	B-CSP From Spray Additive Tank to Eductor	-	Stroke	Q
853A	CV	Core Deluge Check	10	Stroke	C/R
853B	CV	Core Deluge Check	10	Stroke	C/R
854	CV	RWST to RHR Pump Check	11	Stroke	C/R
866A	CV	CS Pump 1-A to Charcoal Filter Deluge	12	-	-
866B	CV	CS Pump 1-B to Charcoal Filter Deluge	12	-	-
867A	CV	Accumulator Dump and SI to Cold Leg Loop B	13	Stroke	C/R
867B	CV	Accumulator Dump and SI to Cold Leg Loop A	13	Stroke	C/R
878G	CV	1-A SI Pump to Cold Leg Loop B After MOV 878B	13	Stroke	C/R

Valve #	Type	Description	Note	Test	Freq
878J	CV	1-B SI Pump to Cold Leg Loop A After MOV 878D	13	Stroke	C/R
1812A	CV	1-A RCDT Pump to 1-B RHR HX	-	Stroke	Q
1812B	CV	1B RCDT Pump to 1A RHR HX	-	Stroke	Q
3516	CV	1B S/G Main Steam Swing Check Stop Valve	14	Stroke	Start-up
3517	CV	1A S/G Main Steam Swing Check Stop Valve	14	Stroke	Start-up
3998	CV	AFP Discharge Check Valve	-	Stroke	Q
4003	CV	TDAFP to S/G 1A Check Valve	-	Stroke	Q
4004	CV	TDAFP to S/G 1B Check Valve	-	Stroke	Q
4009	CV	1A MDAFP to S/G 1A Check Valve	-	Stroke	Q
4010	CV	1B MDAFP to S/G 1B Check Valve	-	Stroke	Q
4014	CV	TDAFP Condensate Suction Check Valve	-	Stroke	Q
4016	CV	1B MDAFP Suction Check	-	Stroke	Q
4017	CV	1A MDAFP Suction Check Valve	-	Stroke	Q
4023	CV	TDAFP Recirculation Check Valve	-	Stroke	Q
5133	CV	Diesel Pump Disch. Check Valve	-	Stroke	Q
5136	CV	Motor Pump Discharge C.V.	-	Stroke	Q

4.10 Category C Relief Valve

Valve #	Type	Description	Note	Test	Freq
203	RV	Letdown High Pressure Safety Relief	15	-	-
209	RV	Letdown Low Pressure Safety Relief	15	-	-
434	RV	Pressurizer Relief	15	-	-
435	RV	Pressurizer Relief	15	-	-
732	RV	CC Surge Tank Relief	15	-	-
755A	RV	CC From A RCP Thermal Barrier Relief	15	-	-
755B	RV	CC From B RCP Thermal Thermal Barrier Relief	15	-	-
861	RV	1-B CS Pump Suction Relief	15	-	-
887	RV	On SI Test Line Inside Containment	15	-	-
1817	RV	Alternate Suction From RHR Pump to C SI Pump	15	-	-
3508	RV	1-B S/G PRV	15	-	-
3509	RV	1-A S/G PRV	15	-	-
3510	RV	1-B S/G PRV	15	-	-
3511	RV	1-A S/G PRV	15	-	-
3512	RV	1-A S/G PRV	15	-	-

Valve #	Type	Description	Note	Test	Freq
3513	RV	1-A S/G PRV	15	-	-
3514	RV	1-B S/G PRV	15	-	-
3515	RV	1-A S/G PRV	15	-	-
5134	RV	Diesel Pump Disch R.V.	15	-	-
5135	RV	Motor Pump Disch R.V.	15	-	-

4.11 Inservice Valve Testing Notes

Note 1 - Valves 304A, 304B and 313 cannot be stroked during normal plant operation on a quarterly basis because they would interrupt coolant flow to the reactor coolant pump seals. These valves will be stroked at cold shutdowns or refueling outages.

Note 2 - Valve 370B cannot be stroked during normal plant operation on a quarterly basis because this test would interrupt charging pump flow. This valve will be stroked at cold shutdowns or refueling outages.

Note 3 - Valves 371 and 427 cannot be stroked during normal plant operation on a quarterly basis because this test would interrupt the letdown (CVCS) system. These valves will be stroked at cold shutdowns or refueling outages.

Note 4 - Valve 383B cannot be stroked during normal plant operation on a quarterly basis because this test would result in substantial radiation exposure to test personnel. A recent survey in the area of the test connection indicated a neutron field of 500 mr/hr and a gamma field of 250 mr/hr. This valve will be stroked at cold shutdowns or refueling outages.

Note 5 - Valves 750A, 750B, 759A and 759B cannot be stroked during normal plant operation on a quarterly basis because this test would require the reactor coolant pumps to be shut down to eliminate the flow through these checks and MOVs. These valves will be stroked at cold shutdowns or refueling outages.

Note 6 - Valves 813 and 814 cannot be stroked during normal plant operation on a quarterly basis because this test would remove the coolant to the reactor vessel supports and cavity wall. These valves will be stroked at cold shutdowns or refueling outages.

Note 7 - Valve 879 is a manual valve in the safety injection test line and is kept locked shut. This valve is not required to change position to perform a safety function. The only requirement is that leakage through valve 879 be acceptably low. Therefore, the quarterly stroke test has been deleted. This valve will be leak tested at refueling outages.

Note 8 - Valves 700 and 721 cannot be stroked during normal plant operation on a quarterly basis because there is an interlock system which prevents these valves from opening when the primary system is at operating pressure. Valves 700, 701, 720 and 721 separate a high pressure system from a low pressure system. These valves will be stroked at cold shutdowns or refueling outages.

Note 9 - Valves 825A, 825B, 856, 896A, and 896B should not be stroked during normal operation on a quarterly basis because this would cause a temporary loss of system function of the ECCS. These valves provide the suction from the refueling water storage tank to the safety injection and residual heat removal pumps. These valves will be stroked at cold shutdowns or refueling outages.

Note 10- Valves 853A and 853B cannot be stroked during normal plant operation on a quarterly basis because this test would pressurize the RHR system to the primary system operation pressure. These valves will be stroked at cold shutdowns or refueling outages.

Note 11- Valve 854 cannot be stroked during normal plant operation on a quarterly basis because there is not a way to establish a flow through this valve when the primary system is at pressure and the RHR system is not operating. This valve will be stroked at cold shutdowns or refueling outages.

Note 12- Valves 866A and 866B cannot be stroked at any time because they are part of the containment spray system, which when pressurized, sprays borated water and/or sodium hydroxide solution throughout containment. Such a condition would be intolerable for future plant operation. An air test could be performed by supplying a large volume of air to the spray ring header which hopefully would be able to lift the check valve flapper. At this time there is not any instrumentation to verify check valve operability, even if an air test would lift the flapper. Therefore, this valve will not be tested until a proper modification may be made in the future.

Note 13- Valves 867A, 867B, 878G, and 878J cannot be stroked during normal operation on a quarterly basis because this test cannot be done when the primary system is at operating pressure. This test may only be done when the plant is in a cold shutdown condition with a partially full primary system in order to prevent an overpressurization.

Note 14- Valves 3516 and 3517 cannot be stroked during normal plant operation in a quarterly basis because they are the main steam swing check stop valves. These valves are stroked during each plant startup.

Note 15- Category C Relief Valves shall be tested in accordance with the extent and frequency requirements of Paragraph IWV-3510 of Article IWV of Section XI of the Code.

PVT 5.0 Records

5.1 Records for the Inservice Pump Testing Program shall be developed and maintained in accordance with Article IWP-6000 of Section XI of the Code.

5.2 Records for the Inservice Valve Testing Program shall be developed and maintained in accordance with Article IWV-6000 of Section XI of the Code.