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August 22, 1985
5211-85-2138

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Operating Reactors Branch No. 4
Washington, D.C. 20555

Dear Mr. Stolz:

Three Mile Island Nuclear Station Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Pump and Valve Inservice Testing (IST)

This is in regard to your letter of July 15, 1985 and July 29, 1985 which requested additional information or clarification of GPUN's July 10, 1984 submittal on inservice testing of pumps and valves (IST). We have been requested to meet with your staff and the NRC contractor, EG&G Idaho, on September 4-5, 1985 to discuss their questions.

We understand that EG&G Idaho reviewers received only the aperture cards for ISI Sketches and some of the prints from the cards were illegible. Had they received the full set of prints (ISI Sketches and Piping and Instrumentation Drawings) which we sent to the NRC, the answers to many of their questions would have been apparent. Therefore, we have provided 4 sets of the drawings (listed in Attachment 1) directly to your staff and to the contractor. Two sets were sent to Mr. Owen Thompson of the NRC and two sets to Mr. Herb Rockhold of EG&G Idaho. We understand the drawings were received in both locations on August 19, 1985.

Attachment 2 addresses the questions and comments from your letter of July 15, 1985.

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Since only two meeting days have been scheduled for what appears to be a lengthy list of agenda items, we are providing this information along with the drawings. Hopefully we can eliminate as many of the items as possible from that agenda prior to the meeting.

Sincerely,

J J Colitz for H. D. Hukill

H. D. Hukill
Director, TMI-1

HDH/MRK/spb

cc: J. Thoma, NRC Project Manager
R. Conte, NRC Resident Inspector
H. Rockhold, EG&G Idaho
O. Thompson, NRC

0339A

Drawing Number	System	Corresponding GAI 302 Drawings
ID-ISI-FD-001	Main Steam and Drains Systems	011, 012, 121, and 719
ID-ISI-FD-002	River Water System	202
ID-ISI-FD-003	Decay Heat Closed Cycle Cooling Water System	645
ID-ISI-FD-004	Core Flooding System	711
ID-ISI-FD-005	Decay Heat Removal System	640 and 669
ID-ISI-FD-008	Condensate System	101
ID-ISI-FD-009	Emergency Feedwater and Feedwater System	081
ID-ISI-FD-010	Nuclear Service Closed Cycle Cooling Water System	610
ID-ISI-FD-011	Controlled Building Chilled Water System	847
ID-ISI-FD-012	Reactor Building Spray System	712
ID-ISI-FD-013	Diesel Generator Jacket, Air and Gear Box Lube Oil Cooler Coolant System	354
ID-ISI-FD-014	Screen Wash and Sluice System River Water Pumps Lubrication System	203
ID-ISI-FD-015	Penetration Fluid Block, Penetration Pressurization, and Hydrogen Recombiner Systems	705, 707, 725 and D-901-22-001
ID-ISI-FD-016	Makeup and Purification System (Letdown Portion)	660
ID-ISI-FD-017	Makeup and Purification System (Makeup Portion)	661
ID-ISI-FD-018	Spent Fuel Cooling System	630
ID-ISI-FD-019	Reactor Coolant System	650
ID-ISI-FD-020	Chemical Sampling and OTSG Chemical Cleaning Systems	671 and 196
ID-ISI-FD-021	Chemical Addition and Liquid Waste Disposal Systems	670, 690, 692, and 669
ID-ISI-FD-022	Intermediate Cooling System	620
ID-ISI-FD-023	Hydrogen Purge System and Miscellaneous Penetrations	231, 271, 694, 706, 720, 721, and 831

INSERVICE TESTING OF PUMPS AND VALVES

GPUNC RESPONSE TO NRC CONTRACTOR QUESTIONS AND COMMENTS

REFERENCES:

1) Letter, R. W. Reid to R. C. Arnold, November 17, 1976
2) Letter, J. F. Stolz to H. D. Hukill, August 3, 1981, CWS/81-194
3) Letter, H. D. Hukill to J. F. Stolz, July 10, 1984, 5211-84-2149
4) Letter, J. F. Stolz to H. D. Hukill, October 23, 1984, 5211-84-3359
5) Letter, H. D. Hukill to J. F. Stolz, March 19, 1985, 5211-85-2035

I. VALVE TESTING PROGRAM

A. GENERAL QUESTIONS AND COMMENTS

QUESTION:

A.1 Provide the limiting value of full-stroke time for each power operated valve in the IST program.

RESPONSE:

Appendix A provides the requested list of limiting value of full stroke time for all the power operated valves in the IST Program. Please be advised that this limiting stroke time is subject to change. When limiting stroke times are changed, appropriate analysis per IWV-3413 and 10 CFR 50.59 will be performed to demonstrate applicable Code and safety standard compliance.

QUESTION:

A.2 Are all valves that are Appendix J, Type C, leak tested included in the IST program and categorized A or A/C?

RESPONSE:

All Appendix J, Type C valves are included in the IST Program and they are categorized A or A/C.

QUESTION:

A.3 All Category A&B active valves must be stroke timed during quarterly testing unless specific relief is requested from the stroke timing requirements of Section XI.

RESPONSE:

All Category A and B active valves are stroke timed each quarter unless it is impractical to do so during plant operation. Footnotes in Table B-1 of the IST Pump and Valve Submittal (Reference 3) state the

details of why it is not practical or safe to full stroke the footnoted valves during plant operation. Relief is not needed since ASME Section XI IWV-3412 states "Valves that cannot be exercised during plant operation shall be specifically identified by the Owner and shall be full-stroke exercised during cold shutdowns". Table B-2 identifies these valves.

B. CORE FLOODING SYSTEM

QUESTION:

B.1 In reference to valves CF-V4A/B, the NRC position is that a sample disassembly program of inspection is an acceptable means of full-stroke exercising check valves and should be performed at each refueling outage.

RESPONSE:

Relief has previously been granted for this item. See Item B.2 of Reference 4 which documents acceptability of part stroking CF-V4A/B on a cold shutdown frequency since CF-V5A or B is full stroke tested each cold shutdown. CF-V4A/B and CF-V5A/B see essentially the same service condition and they are the same size, manufacturer and catalog number. In addition, CF-V4B was disassembled in November 1983 and was found to be in satisfactory condition.

CF-V4A, or CF-V4B, or CF-V5A, or CF-V5B (1 of the four) will be disassembled each 10 years for an inspection. In accordance with the relief previously granted, if degradation which would make the valve's full stroke capability questionable is found, then the remaining three valves will be disassembled and inspected during that outage. The partial test of CF-V4A/B each cold shutdown adequately demonstrates the system performance as defined in the bases of TMI-1 Tech. Spec. 4.5.2.3.

QUESTION:

B.2 How are valves CF-V5A/B full-stroke exercised during cold shutdowns?

RESPONSE:

Normal Decay Heat Removal System Operation during plant cold shutdown with a flow rate of ~3000 gpm demonstrates that CF-V5A or B has opened. Surveillance Procedure (SP) 1303-11.54 which is performed each refueling demonstrates full LPI flow stroke operation of both CF-V5A and B.

In Table B-1 of the IST valve submittal under "Test Frequency Column" for CF-V5A/B add an asterisk to the "C". "C*" will be used to designate valves where either A or B valve is tested on a cold shutdown frequency by the normal operation of providing Decay Heat Removal flow at ~3000 gpm. In addition, both A and B valves designated "C*" will be tested each refueling interval.

C. CHEMICAL SAMPLING AND OTSG CHEMICAL CLEANING SYSTEM

QUESTION:

C.1 What is the purpose of valve CA-V29 located in the lower left hand corner of Drawing FD-020?

RESPONSE:

CA-V29 is in the depressurized RC sample return piping to the Makeup Tank upstream of MU-F1A/B. MU-F1A/B is shown on Drawing No. FD-016. During normal plant operation, the purpose of check valve CA-V29 is to close so that the MU Tank is not depressurized. CA-V29 has no safety function since loss of MU Tank Pressure is acceptable following an accident. The BWST will be used for Makeup pump suction.

D. CHEMICAL ADDITION AND WASTE DISPOSAL SYSTEM

QUESTION:

D.1 What is the purpose of the chemical addition penetration No. 307? Why is valve CA-V192 identified as a passive valve while valve CA-V189 is not?

RESPONSE:

Footnote (1) on Page 3 of Table B-1 in Reference 3 is in error. This footnote should be deleted. During normal plant operation, check valve CA-V192 is open supplying 100 cc/min reclaimed water purge to the No. 3 seal of each Reactor Coolant Pump. This purge supply was provided in the original design to enhance RC Pump seal reliability but is not required to maintain seal integrity and is therefore isolated on Reactor Building containment isolation signals. CA-V192 has been and will continue to be leak tested each refueling interval per Surveillance Procedure 1303-11.18 and TMI-1 Tech. Spec. 4.4.1.2.1.b.1.

QUESTION:

D.2 Does valve CA-V134 perform any function important to safety?

RESPONSE:

CA-V134 supplies Reclaimed water to the BWST. CA-V134 is normally closed during plant operation. No emergency procedures require re-filling of the BWST and manual valve CA-V134 does not perform a safety function.

E. CONTROL BUILDING CHILLED WATER SYSTEM

QUESTION:

E.1 Do any of the temperature control valves shown on Drawing FD-011 have a required fail-safe position?

RESPONSE:

ASME Section XI, IWV-1200, 1980 Edition through 1980 Winter Addenda exempts valves used for system control. If desired, further detail on valve failure modes can be provided at the meeting.

F. EMERGENCY FEEDWATER AND FEEDWATER SYSTEMS

QUESTION:

F.1 Provide a more detailed technical justification for not full-stroke exercising valves CO-V16A and CO-V16B during each cold shutdown.

RESPONSE:

Relief has previously been granted in Reference No. 4. As stated in Relief Request II, TMI-1 must limit the exposure of the secondary side of the OTSG to oxygenated water. Therefore, the appropriate test interval should be refueling or a cold shutdown when cold shutdown exceeds 30 days. Also the bases for TMI-1 Tech. Spec. 4.9.1.6 state that these surveillance requirements are adequate "to ensure that the overall EFW System functional capability is maintained".

G. DECAY HEAT REMOVAL SYSTEM

QUESTION:

G.1 Review the safety function of valves DH-V1, DH-V2, and DH-V3 to determine if they should be categorized A.

RESPONSE:

DH-V1 and DH-V2 are high pressure motor operated valves that are interlocked shut and cannot be opened unless the Reactor Coolant System is <400 psig. DH-V3 is a low pressure valve; therefore, it does not perform a pressure barrier function. In Addition, these valves do not meet the configuration criteria of WASH 1400 Event V. These valves are not included in the Event V Order dated April 20, 1981. Attached to and referenced in the Event V Order is the Technical Evaluation Report (TER) Primary Coolant System Isolation Valves dated October 24, 1980, by the NRC's contractor, Franklin Research Center (FRC). Page 5 of the TER states that FRC has found no other valve configuration of concern in this plant. Therefore, we believe that DH-V1, V2, and V3 are not required to be tested for the pressure isolation function. DH-V1 and V2 are included in the GPUN's Appeal (Reference 5) of the IST SER Open Items which we understand is currently under review by CRGR.

QUESTION:

G.2 Provide a more detailed technical justification for not full-stroke exercising valves DH-V1 and DH-V2 quarterly.

RESPONSE:

It is allowable per ASME Section XI, IWV-3412 to full stroke valves on a cold shutdown frequency where it is impractical or unsafe to test each quarter. It is impractical and unsafe to test DH-V1 and V2 each quarter because they are interlocked closed when RCS pressure is above 400 psig. Such testing would require defeating safety interlocks.

Such testing of DH-V1 or V2 would reduce redundancy by providing only one high pressure valve between the Reactor Coolant System and the low pressure Decay Heat Removal System. We believe not testing DH-V1 and DH-V2 during normal operation conforms with the NRC staff position that states that unsafe testing is not to be conducted. See Enclosure 2, Item No. 3 from Reference 1.

QUESTION:

G.3 Review the safety function of valves DH-V4A and DH-V4B to determine if they should be categorized A.

RESPONSE:

DH-V4A/B are automatically opened to provide initiation of Low Pressure Injection flow in response to Engineered Safeguards Actuation signals. They are normally closed during power operation except for testing.

Upstream check valves DH-V22A/B and CF-V5A/B are WASH 1400 Event V valves. These valves are tested per Technical Specifications to assure reasonable leak tightness. In addition, neither GPUN, NRC, nor FRC identify DH-V4A/B as Event V configuration. Therefore, they are not Category A. We believe that Category A testing of DH-V22A/B and CF-V5A/B provides two individually tested pressure barriers and more than adequate protection for the Decay Heat Removal System.

QUESTION:

G.4 Review the safety function of valves DH-V6A and DH-V6B to determine if they should be categorized A. Provide a more detailed technical justification for not full-stroke exercising these two valves during power operation or cold shutdown.

RESPONSE:

DH-V6A/B are in a system which is effectively a closed loop outside the Reactor Building. That piping system is Seismic Category I/N2 design. The motor operated valves are remotely opened by the Control Room Operator following an accident and do not receive an automatic post-accident closing (or opening) signal.

Relief has previously been granted to allow testing DH-V6A/3 each refueling interval per SER Item 4.3.1.1 of Amendment No. 71 to TMI-1 Technical Specifications. DH-V6A/B are tested each refueling for the reason given in the IST Valve Submittal Table B-2, Page 3 of 13 (Reference 3). We believe it is impractical to test these valves each cold shutdown. A refueling interval stroke time test since 1978 has not shown any problem with these valves.

QUESTION:

G.5 How are valves DH-V14A and DH-V14B partial-stroke exercised quarterly? What alternate methods have been investigated to full-stroke exercise these valves at the Code specified frequency?

RESPONSE:

A quarterly part-stroke test of DH-V14A/B is performed by recirculating the BWST with BS-P1A/B or DH-P1A/B. SP 1303-11.54 demonstrates that DH-V14A/B opens ~73% by pumping from the BWST to the Reactor Vessel each refueling outage.

Relief has previously been granted from full stroking DH-V14A/B each refueling per Reference No. 4. T.S. 4.5.2.2 specifies that testing "during each refueling period and following maintenance or modification" affecting system flow characteristics is an acceptable frequency for determining continued operability of this system. Past test results give no basis to warrant an increased test frequency.

We have evaluated the possibility of testing both DH-P1A/B and BS-P1A/B at the same time. (DH-P1A/B pumping from the BWST to the reactor vessel and BS-P1A/B on recirculation of the BWST.) This was evaluated as impractical due to potential risk to safety related equipment, potential impact on refueling water clarity, and the limited time allowable to pump to the reactor vessel.

QUESTION:

G.6 Provide a more detailed technical justification for not full-stroke exercising valves DH-V16A and DH-V16B during cold shutdown.

RESPONSE:

DH-V16A/B is the discharge check valve on DH-P1A/B and relief has been previously granted for DH-V16A/B to allow testing each refueling interval per Reference No. 4. T.S. 4.5.2.2 specifies that testing "during each refueling period and following maintenance or modification" affecting system flow characteristics is an acceptable frequency for determining continued operability of this system. Past test results give no basis to warrant increased test frequency.

In Table B-1 of the IST Valve Submittal (Reference No. 3) under "Test Frequency Column" for DH-V16A/B, delete "R" and add "C*". "C*" will be used to designate valves where either A or B valve is tested on a cold shutdown frequency by the normal operation of providing Decay Heat Removal flow at ~3000gpm. In addition, both A and B valves designated "C*" will be tested each refueling interval.

QUESTION:

G.7 Review the safety function of valves DH-V22A and DH-V22B to determine if they should be categorized A/C.

RESPONSE:

DH-V22A/B are essentially categorized A/C. The symbol "Δ" was used instead of "A". The "Δ" is used to differentiate between "A" valves which are leak tested by Appendix J and "Δ" valves which are leak tested as WASH 1400 valves.

QUESTION:

G.8 Provide a detailed technical justification for not full-stroke exercising valves DH-V22A and DH-V22B quarterly. How are these valves full-stroke exercised during cold shutdowns while upstream valves DH-V16A and DH-V16B are only partial-stroke exercised?

RESPONSE:

Add the following footnote to Reference No. 3, Table B-1, Page 8 of 37 for DH-V22A/B.

"(4) DH-V22A/B are on the discharge side of DH-P1A/B. DH-P1A/B only produce ~200 psig. Therefore, it is not possible to overcome normal RCS pressure with DH-P1A/B. Thus, it is impractical to test the opening function of DH-V22A/B each quarter.

DH-V22A or B are full stroke tested during cold shutdowns by recirculating the reactor vessel with DH-P1A or B at ~3000 gpm. Normal Decay Heat Removal System operation at a flow rate of ~3000 gpm demonstrates that DH-V22A or B has opened. SP 1303-11.54, which is performed each refueling interval, full strokes both DH-V22A and B.

T.S. 4.5.2.2 specifies that testing "during each refueling period and following maintenance or modification" affecting system flow characteristics is an acceptable frequency for determining continued operability of this system. Past test results give no basis to warrant increased test frequency."

In Table B-1 of the IST Valve Submittal under "Test Frequency Column" for DH-V22A/B replace "C" with "C*". "C*" will be used to designate valves where either A or B valve is tested on a cold shutdown frequency by the normal operation of providing Decay Heat Removal flow at ~3000 gpm. In addition, both A and B valves designated "C*" will be tested each refueling interval.

DH-V16A/B are part stroked each quarter because the piping configuration allows BWST recirculation flow rate through DH-V16A/B. DH-P1A/B is used to recirculate the BWST. The recirculation piping is upstream of DH-V22A/B; therefore, recirculation cannot be established through DH-V22A/B. See Drawing No. FD-005.

QUESTION:

G.9 What is the safety function of valves DH-V38A and DH-V38B?

RESPONSE:

Based on the LOCA symptoms, operators will use DH-V38 A/B to balance DH flow (~1000 gpm per loop) per procedure 1210-7. This will be required particularly when one of the two DH pumps fails to operate. Such an action will ensure that sufficient LPI is supplied to the RCS in the event of a core flood line break.

QUESTION:

G.10 Review the safety function of valves DH-V59A and DH-V59B to determine if they should be included in the IST program.

RESPONSE:

The piping in which these valves are located provides non-safety grade, long term post accident Reactor Building Sump pH control capability as an operator convenience. Immediate sump pH control is automatically provided by the drawdown of the Sodium Hydroxide tank in the Building Spray System. Therefore, DH-V59A/B need not be included in the IST program.

H. RIVER WATER SYSTEM

QUESTION:

H.1 Review the safety function of valves DR-V6A, DR-V6B, DR-V7A, and DR-V7B to determine if they should be included in the IST program.

RESPONSE:

The internals of DR-V6A and B have been removed. Therefore, there is no active mechanism to test. A 10 CFR 50.59 safety evaluation was performed which allowed the removal of the internals.

DR-V7A/B. Each river water pump has one vacuum breaker check valve which permits air to enter the pump discharge column when the pump is stopped. The atmospheric air is used to prevent a build-up of a partial vacuum in the pump discharge column.

A non-functioning vacuum breaker could permit the pump to be started with a partial vacuum in the discharge column potentially resulting in a water hammer (shock loading) of the pump and related piping.

In order to provide additional assurance that the vacuum breaker check valves will open after pump shutdown, GPUN will add these valves to the IST program.

I. EMERGENCY FEEDWATER AND FEEDWATER SYSTEMS

QUESTION:

I.1 How is the EF-V3 partial-stroke exercised quarterly? Provide a detailed technical justification for not full-stroke exercising this valve at the Code specified frequency. Have the internals been removed from this valve?

RESPONSE:

EF-V3 is part stroke tested quarterly using SP 1303-3G by supplying condensate water through EF-V14 then through EF-V3 to EF-V24. SP 1300-3G has controls to ensure EF piping remains filled and to minimize chemical contamination. EF-V3 was disassembled in December 1984 for IST purposes and found to be in excellent condition (like new). Therefore, there is reasonable assurance that EF-V3 would open if required.

Full flow testing of valve EF-V3 would introduce river water, silt and corrosives into the suction piping of the three Emergency Feedwater Pumps and ultimately into the OTSGs. This is unacceptable from a chemistry control standpoint for normal operations. This valve is downstream of EF-V4 and 5; if EF-V4 and 5 are not stroked, then there is no flow to fully open EF-V3.

The internals for this valve are still in place at this time. Instructions and a 10 CFR 50.59 safety evaluation for removal of the internals are in progress.

QUESTION:

I.2 Provide a more detailed technical justification for not full-stroke exercising valves EF-V11A, EF-V11B, EF-V12A, EF-V12B, and EF-V13 during each cold shutdown. How is valve EF-V13 partial-stroke exercised quarterly?

RESPONSE:

Request for relief of this item was previously granted per Reference No. 4. Our previous response to this item was addressed in Reference No. 3.

EF-V13 is part stroke exercised quarterly by opening a drain valve at EF-V29 when EF-P1 is operating.

QUESTION:

I.3 Review the safety function of the following valves to determine if they should be included in the IST program.

Category B	Category C	
EF-V1A	EF-V17A	
EF-V1B	EF-V17B	(Note that EF-V19A/B are the
EF-V2A	EF-V21	correct valves which perform
EF-V2B		a similar function to EF-V21)

RESPONSE:

The motor operated valves EF-V1A/B are located in the suction header of the EFW pumps. These valves are normally open during plant operation and are verified to be in the open position at least once each 31 days in accordance with the Technical Specification requirements of Section 4.9.1.3. These valves are not required to perform an isolation safety function. They are installed to allow maintenance of the EFW pumps. Therefore, these valves should not be included in the IST program.

Valves EF-V2A/B are normally open during plant operation and are verified to be in the open position at least once per 31 days in accordance with Technical Specification No. 4.9.1.3. These valves are not required to perform an isolation safety function since valves EF-V30A or B can be used for isolation of the affected OTSG if required per plant Abnormal Transient Procedures. Therefore, valves EF-V2A/B should not be included in the IST program.

Valves EF-V19A/B and EF-V21 are check valves for the EFW pump recirculation lines. Since the EFW pump recirculation control valves are locked open, these check valves will be tested to fully open during surveillance test of the EFW pump under the recirculation mode. In addition, there are block orifices downstream of these check valves to reduce the pump discharge pressure to the pump suction pressure which is approximately equal to the static head of the CST water. These valves are to prevent windmilling the EFW pumps and are not required to perform an isolation function. Therefore, the current surveillance test of the EFW pumps in the recirculation mode verifies the opening of these check valves and is an adequate test. Any failure of the check valves to open would be detected by high delta P during the EFW pump test.

J. NUCLEAR SERVICES CLOSED CYCLE COOLING WATER SYSTEM

QUESTION:

J.1 Provide a more detailed technical justification for not full-stroke exercising valves EF-V4 and EF-V5 during cold shutdown.

RESPONSE:

Relief has previously been granted for EF-V4 and EF-V5 to allow full stroke testing on a refueling interval basis (Reference No. 4, Section 4.4.2.1). These valves are part of the cross-connect between the Emergency River Water and Emergency Feedwater Systems. Because of the reasons given in Relief Request I of Table B-2 of the valve testing program (Reference No. 1), the valves should only be full-stroke tested during refueling outages which will provide reasonable assurance of valve operability.

K. DIESEL GENERATOR JACKET, AIR, AND GEAR BOX LUBE OIL COOLER COOLANT SYSTEM

QUESTION:

K.1 How are check valves EG-V32A/A, EG-V32A/B, EG-V32B/A, and EG-V32B/B individually verified to full-stroke exercise quarterly?

RESPONSE:

EG-V32A/A, A/B, B/A, and B/B are located downstream of the Diesel Generator Jacket Coolant Radiator. These valves must open to allow coolant to be pumped out of the radiator. Their function is verified open during the monthly performance of SP 1303-4.16. This procedure verifies that the diesels are capable of performing their design rating of 3 $\pm$.1 MW for one hour.

Acceptable jacket water temperature of 120 to 180°F is verified. If water temperature is found satisfactory EG-V32A/A, A/B, B/A and B/B have functioned open. System design does not allow individual testing of these valves.

QUESTION:

K.2 Do valves EG-V31A, EG-V31B, EG-V47A, and EG-V47B have a required fail-safe position?

RESPONSE:

EG-V31A/B, 47A, 47B are temperature control valves. Therefore, they are exempt per ASME Section XI, IWV-1200(a). If desired, further detail on valve failure modes can be provided at the meeting.

L. PENETRATION FLUID BLOCK, PENETRATION PRESSURIZATION, AND HYDROGEN RECOMBINER SYSTEMS

QUESTION:

L.1 When is the Fluid Block System expected to be disabled and the valves listed removed from the IST program? If these valves remain in the IST program and leakage is important to performing their safety function, they must be categorized A/C.

RESPONSE:

Subsequent to our submittal of Reference No. 3, the Fluid Block System has now been disabled and the valves listed in the IST program have now been deleted from all testing requirements.

M. EMERGENCY FEEDWATER AND FEEDWATER SYSTEMS

QUESTION:

M.1 Provide the specific technical justification for not verifying valves FW-V12A and FW-V12B closed during cold shutdown and refueling outages. What alternate methods have been considered to verify operability of these valves?

RESPONSE:

Per Item B.4 of Reference No. 4, GPUN will develop a method to verify the full closure capability of FW-V12A/B before startup from the Cycle 6 refueling outage. Until that time, NRC has agreed that testing of FW-V12A/B will not be required based on disassembly and repair of the valves in 1980. Therefore, this item is resolved for Cycle 5 operation.

N. HYDROGEN PURGE SYSTEM AND MISCELLANEOUS PENETRATIONS

QUESTION:

N.1 How are the following valves fail-safe tested?

HM-V1A	HM-V3A
HM-V1B	HM-V3B
HM-V2A	HM-V4A
HM-V2B	HM-V4B

RESPONSE:

HM-V1A/B, 2A/B, 3A/B, and 4A/B are solenoid operated valves which are deenergized to close. Therefore, they go to their fail safe position when electrical power is removed. Closed indication (from reed switch) is provided in the Control Room

O. PENETRATION FLUID BLOCK, PENETRATION PRESSURIZATION, AND HYDROGEN RECOMBINER SYSTEMS

QUESTION:

O.1 How are valves HR-V22A, HR-V22B, HR-V23A, and HR-V23B fail-safe tested?

RESPONSE:

Same as Item N.1.

P. INTERMEDIATE COOLING SYSTEM

QUESTION:

P.1 What is the safety function of valves IC-V1A and IC-V1B?

RESPONSE:

IC-V1A/B supplies cooling water to the Primary System Letdown Cooler. Normally one cooler is in service. These valves do not provide an essential safety function. They may be used during certain abnormal conditions to place a second Letdown Cooler in service to maximize letdown flow.

QUESTION:

P.2 How are valves IC-V2, IC-V3, IC-V4, and IC-V6 partial-stroke exercised during power operation? What are the consequences of valve failure while full-stroke exercising these valves during power operation?

RESPONSE:

IC-V2 has a test switch logic that allows it to only close 10%. For IC-V3, V4, and V6, valve stem mechanical blocks are used to allow partial stroking of the valves. IC-V2, V3, V4, and V6 are in the supply or return lines to the Primary Letdown Coolers, Control Rod Drive Cooling Coils, Reactor Coolant Pump Exchangers, and/or R.C. Drain Tank Heat Exchanger.

IC-V2, V3, V4, and V6 fall under the NRC Staff Position which states that "all valves whose failure in a non-conservative position during the cycling test would cause a loss of system function should not be exercised". If these valves were not reopened promptly, loss of the above coolers could result in component overheating (especially CRDM stators) and reactor shutdown.

Q. MAIN STEAM SYSTEM AND DRAINAGE

QUESTION:

Q.1 Provide a detailed technical justification for not full-stroke exercising valves MS-V1A, MS-V1B, MS-V1C, and MS-V1D during power operation.

RESPONSE:

Full-stroke testing during power operation is not practical because of the potential for possible turbine pressure instabilities downstream of the valves and possible unnecessary challenges to safety valves upstream of MS-V1. Also, Abnormal Procedure 1203-42 requires the reactor to be tripped if MS-V1A/B/C or D completely close during power operation in order to prevent damage to the OTSG that was not isolated.

QUESTION:

Q.2 What are the consequences of valve failure in the open position while full-stroke exercising valves MS-V4A and MS-V4B during power operation?

RESPONSE:

Prior to stroke timing MS-V4A/B each quarter, its block valve MS-V15A/B is closed. There are no consequences since no steam flow results if MS-V4A/B remains open with MS-V15A/B closed.

QUESTION:

Q.3 What alternate methods have been investigated for full-stroke exercising valves MS-V9A and MS-V9B? Are these valves exercised individually? Do these valves perform a safety function in the closed position?

RESPONSE:

This item was addressed in Reference No. 5 as follows:

"These valves supply steam from the OTSGs to the steam driven Emergency Feedwater Pump (EF-P1). During a cold shutdown, it is impractical to stroke test these valves (full stroke or partial stroke) since the steam which would be needed to operate these valves is not available during cold shutdown conditions.

Full stroke testing of MS-V9A/B is also impractical due to other limitations during plant conditions when steam is available. EF-P1 must be tested using the recirculation line to the Condensate Storage Tank bypassing the OTSG. This is to prevent degradation of the OTSGs by excessive thermal stress cycling of the emergency feedwater nozzles. The number of thermal cycles on the emergency

feedwater nozzles is limited to (40) cycles over the life of the plant. Due to the small size of the recirculation line, EF-P1 cannot be tested at full capacity; and MS-V9A/B will not open fully. Under these restrictions it is only possible to obtain approximately 48% flow which corresponds to about 80% opening of MS-V9A/B.

Plant modifications which would be required to perform full stroke tests of MS-V9A/B either by piping in auxiliary steam or by replacing the recirculation piping with larger piping capable of recirculating the full EFW pump capacity would introduce exorbitant cost. GPUN has not fully examined the cost and safety impact of modifications which would be required to test MS-V9A/B, however, we do not feel that such modifications would be beneficial.

MS-V9B was disassembled for IST examination purposes in late 1984 and found to be in excellent condition. Since no indication of potential degradation was found, this provides additional assurance of the continued capability of MS-V9A/B to open fully when needed.

It is impractical to test MS-V9A/B when steam is not available and it is also impractical to perform a full stroke test on MS-V9A/B. GPUN concludes that quarterly testing of MS-V9 at 48% flow (80% open) when steam is available meets the intent of the ASME Code Section XI and the relief which is being requested is therefore justified."

MS-V9A/B are exercised individually per GPUN surveillance test procedure No. 1300-3G A/B.

MS-V9A/B are not required to perform a safety function in the closed position since the normally closed valves MS-V13A/B and MS-V10A/B perform this function.

QUESTION:

Q.4 Review the safety function of the following valves to determine if they should be included in the IST program and categorized as indicated.

Category B	Category C
AS-V4	MS-V22A
MS-V8A	MS-V22B
MS-V8B	
MS-V6	

RESPONSE:

AS-V4 is a normally closed valve, does not perform any safety function and is not required to change position during any transients. It is an isolation valve between main steam and auxiliary steam and is only opened to use auxiliary steam to test the turbine driven emergency feedwater pump when MS is not available.

MS-V8A/B are normally open valves and are not required to bring the plant to hot shutdown after a transient and do not have to change position during a transient. Therefore, MS-V8A/B are not included in the IST Program.

MS-V6 is a normally open, control valve which fails open to supply steam to the turbine driven emergency feedwater pump. MS-V6 is a pressure regulating valve and is exempt from testing per IWV-1200.

MS-V22A/B prevent overpressurization of the piping. Since the upstream pressure regulation valve MS-V6 will self-regulate the downstream pressure to less than 175 psig, MS-V6 is adequate to protect down stream piping. These two safety valves are not required to perform a safety function. Therefore, MS-V22A/B should not be included in the IST program.

R. MAKE-UP AND PURIFICATION SYSTEM - LETDOWN PORTION

QUESTION:

R.1 What is the safety function of valves MU-V1A and MU-V1B?

RESPONSE:

MU-V1A/B are in the Primary Letdown piping to the Letdown Coolers. Normally one cooler is inservice. These valves do not provide an essential safety function. These valves may be used during certain abnormal conditions to place a second Letdown Cooler in service to maximize letdown flow.

QUESTION:

R.2 Provide a detailed technical justification for not full-stroke exercising valves MU-V2A, MU-V2B, and MU-V3 quarterly during power operation.

RESPONSE:

MU-V2A/B and MU-V3 are part stroked each quarter. This is per ASME Section XI, IWV-3412(a) requirements. A full stroke test is not required because it is impractical. It is impractical to isolate Letdown during power operation because this may preclude timely restoration of letdown flow. If letdown flow is totally isolated, the reactor coolant system loses its normal means of purification and compensation for volume addition due to design RC Pump Seal Injection in-leakage and may lead to reactor shutdown. Also thermal cycle considerations on the Letdown Coolers do not allow full closures of MU-V2A/B or MU-V3 during normal plant operation.

QUESTION:

R.3 Does partial-stroke exercising MU-V3, which normally full-strokes in less than 1 second, present any operational complications due to isolation of the letdown flow?

RESPONSE:

See Item R.2. MU-V3 is part-stroke exercised by installing a mechanical clevis assembly to physically limit valve travel to prevent significant letdown flow reduction.

QUESTION:

R.4 Provide a detailed technical justification for not full-stroke exercising valves MU-V25 and MU-V26 quarterly during power operation.

RESPONSE:

MU-V25 and MU-V26 are in the RC Pump Seal Return line and are part stroked each quarter. Isolation of the RC Pump Seal Return Line at power risks permanent damage to the RC Pump Seals and Reactor Coolant System leakage, and may result in reactor shutdown.

QUESTION:

R.5 What is the safety function of valve MU-V51?

RESPONSE:

The safety function of MU-V51 is to open by Control Room Operator action during some emergency procedures to supply concentrated boric acid from the Boric Acid Mix Tank to the Makeup and Reactor Coolant Systems to maintain a 1% reactor Shutdown Margin by soluble poison reactivity control.

QUESTION:

R.6 Review the safety function of the following valves to determine if they should be included in the IST program.

Category B	Category C
MU-V11A	MU-V47
MU-V11B	

RESPONSE:

MU-V11A and MU-V11B provide isolation capability for maintenance on makeup filters MU-F1A/B. Since there is no safety function associated with these valves, they should not be included in the IST program.

MU-V47 prevents loss of makeup tank pressure when the letdown is isolated or in a bleed mode of operation. The loss of makeup tank pressure is acceptable following an accident when the BWST will be used for makeup pump suction. Therefore, this valve should not be included in the IST program.

S. MAKE-UP AND PURIFICATION SYSTEM - MAKE-UP PORTION

QUESTION:

S.1 Provide a more detailed technical justification for not full-stroke exercising valves MU-V14A and MU-V14B open quarterly and during cold shutdowns.

RESPONSE:

This relief has previously been granted in Reference No. 4.

MU-V14A/B are stop check valves. The motor operated function (Category B) is stroke timed each quarter. Category C testing verifies full stroke open function each refueling. The frequency of testing required by T.S. 4.5.2.1 which states that "during each refueling interval and following maintenance or modification" affecting system flow characteristics is sufficient to demonstrate HPI system operability. In addition, past test results provide no basis to warrant increasing the test frequency.

QUESTION

S.2 Is thermal shock to the injection nozzles a consideration when full-stroke exercising valves MU-V16A, MU-V16B, MU-V16C, and MU-V16D during power operation? Are these valves presently being leak-rate tested as containment isolation valves?

RESPONSE

Thermal shock to the injection nozzles is not a consideration when stroke timing MU-V16A/B/C/D each quarter because thermal shock is avoided by coordinating pump lineup switching when stroke timing MU-V16A-D.

MU-V16A/B/C/D are not Appendix J valves since they automatically open in response to accident conditions.

QUESTION

S.3 Provide a more detailed technical justification for not full-stroke exercising valves MU-V73A, MU-V73B, and MU-V73C quarterly during power operation and cold shutdown.

RESPONSE

Relief has previously been granted in Reference No. 4.

MU-V73A/B/C are the discharge check valves on MU-P1A/B/C. During normal operations, MU-P1A or B or C supplies normal makeup to the RCS, RC Pump seal injection, and recirculation flow. The total of these flow rates is much less than accident design flow rate and this is considered a partial stroke test of MU-V73A/B/C. No other testing method is practical during normal plant operation.

T.S. 4.5.2.1 requires a test of the High Pressure Injection (HPI) System to be conducted on a refueling interval. This test demonstrates the continued operability of the system, and therefore, is adequate to assure the operability of these valves. In addition, past test results give no basis to warrant increased test frequency.

QUESTION

S.4 Provide a more detailed technical justification for not full-stroke exercising the following valves quarterly during power operation and cold shutdown. Do any of these valves perform a containment isolation or pressure boundary isolation function?

MU-V86A	MU-V107A
MU-V86B	MU-V107B
MU-V94	MU-V107C
MU-V95	MU-V107D
MU-V220	

RESPONSE

Relief has previously been granted to allow full stroke tests to be conducted each refueling interval in Reference No. 4

These valves are in the four HPI legs to the RCS. Thermal shock to the injection nozzle considerations do not allow testing these valves each quarter. T.S. 4.5.2.1 requires a test of the High Pressure Injection (HPI) System to be conducted on a refueling interval. This test demonstrates the continued operability of the system, and therefore, is adequate to assure the operability of these valves. Past test results give no basis to warrant an increased test frequency.

These valves are not Appendix J valves because they open in response to accident conditions. In addition, these HPI check valves do not meet the configuration criteria of WASH 1400 Event V and are not included in the Event V Order dated April 20, 1981. Attached to and referenced in the Event V Order is the Technical Evaluation Report (TER) Primary Coolant System Isolation Valves dated October 24, 1980, by the NRC's contractor, Franklin Research Center (FRC). Page 5 of the TER states that FRC has found no other valve configuration of concern in this plant. Therefore, we believe that these HPI check valves are not required to be tested for pressure isolation function. These valves are included in the GPUN Appeal (Reference No. 5) of the IST SER Open Items which we understand is currently under review by CRGR.

QUESTION

S.5 What is the safety function of valves MU-V116 and MU-V219? Does valve MU-V219 perform a containment isolation function?

RESPONSE

The safety function of both MU-V116 and MU-V219 is to perform containment isolation.

MU-V219 does not receive a containment isolation signal and is exempted from Appendix J testing requirements.

QUESTION

S.6 What is the safety function of valve MU-V217?

RESPONSE

This valve has no essential safety function. It provides high makeup flow by manual actuation from the Control Room in case of a reactor trip or other abnormal transients, avoiding any unnecessary challenges to the HPI system.

QUESTION

S.7 Review the safety function of valve MU-V112 to determine if it should be included in the IST program.

RESPONSE

MU-V112 prevents backflow of BWST water to the makeup tank during High Pressure Injection after an accident. This function of the valve does not affect operation of the HPI. As the water drains down from the BWST, there will be a preferential drawdown from the BWST. Thus, even if back flow occurred as a result of MU-V112 failure, the water inventory will be still available for HPI. Therefore, MU-V112 is not required to be included in the IST program.

T. NITROGEN SUPPLY SYSTEM

QUESTION

T.1 Is there another containment isolation valve associated with NI-V27 on the nitrogen line at penetration 307?

RESPONSE

Yes. NI-V26 and NI-V27 are both manual locked closed isolation valves located outside of the reactor building.

U. RIVER WATER SYSTEM

QUESTION

U.1 What is the safety function of valves NR-V4A and NR-V4B?.

RESPONSE

During a 1600 psig ESAS actuation NR-V4A and B automatically close to prevent cooling water from being diverted from the NR Coolers.

QUESTION

U.2 Review the safety function of the following valves to determine if they should be included in the IST program and categorized as indicated.

Category B	Category C
NR-V6	NR-V22A
NR-V2	NR-V22B
NR-V19	NR-V22C
NR-V18	NR-V29

RESPONSE

NR-V2 and 6 are cross-connect valves between the secondary river and nuclear river water systems. In accordance with Abnormal Procedure No. 1203-19, Nuclear River Water would not be cross connected to supply Secondary River Water unless the reactor were subcritical. These valves are normally closed, remain closed during an accident, and receive no automatic signal; therefore, they have no safety function.

NR-V18 and NR-V19 are not required to be repositioned during transient conditions or to mitigate any accident. NR-V19 is normally maintained closed unless additional de-icing water is required at the screenhouse intake. NR-V18 is normally full open or throttled to maintain the proper nuclear river water system pressure. NR-V18 and NR-V19 do not provide an essential safety function.

NR-V22A/B/C - These vacuum breakers are similar to those addressed in the response to question H.1. Therefore these valves will also be added to the IST Program.

NR-V29 is the siphon breaker in the Heat Exchanger Vault. During normal plant operation, the NR piping is filled and vented with two NR pumps in operation. Siphon flow from the Heat Exchanger Vault is prevented by the vent (candy cane) downstream of NR-V18. Therefore, NR-V29 has no safety function.

V. NUCLEAR SERVICE CLOSED CYCLE COOLING WATER SYSTEM

QUESTION

V.1 Provide the specific technical justification for not full-stroke exercising valves NS-V4, NS-V15, and NS-V35 during power operation.

RESPONSE

NS-V4, V15, and V35 supply or return cooling water for the RC Pump Motor Coolers. If, for testing purposes, these valves were closed and they were not able to be reopened, this would shortly require deenergizing all four Reactor Coolant Pump Motors. Therefore, in accordance with ASME Section XI, IWV-3412 and NRC letter to Met-Ed dated November 17, 1976, Enclosure 2, Paragraph 1, these valves will be full stroke tested on a cold shutdown frequency and part stroked each quarter.

QUESTION

V.2 How is valve NS-V11 full-stroke exercised closed (its safety position) quarterly during power operation?

RESPONSE

NS-V11 is a Containment Isolation Valve which supplies cooling water to the RC Pump motor coolers and as in Item V.1 cannot be closed during normal plant operation. NS-V11's close function is verified each refueling when it is leak rate tested per SP 1303-11.18. NS-V11 is also confirmed for open function on a quarterly basis.

QUESTION

V.3 Are valves NS-V52A/B/C and NS-V53A/B/C leak tested to Appendix J requirements to demonstrate their containment isolation function?

RESPONSE

No. Valves NS-V52A/B/C and NS-V53A/B/C are cooling water isolation to the motors on the Reactor Building Emergency Cooling fans and they remain open post-accident. In addition this Seismic Category 1 piping system is a closed loop within the reactor building and it remains pressurized greater than the peak Reactor Building pressure following an accident.

QUESTION

V.4 Do any of the following valves have a required fail-safe position?

NS-V55A NS-V55B	cooling water to control building coolers	*(Note: We believe the correct numbers for valves referred to in this question are NS-V108A/B)
NS-V48A* NS-V48B*	cooling water to control building air conditioning	

RESPONSE

V.4 NS-V55A/B and NS-V108A/B are control valves and are exempt from IST by ASME Section XI, IWV-1200, 1980 Edition through Winter 1980 Addenda.

W. RIVER WATER SYSTEM

QUESTION

W.1 Review the safety function of valves RR-V10A, RR-V10B, RR-V12A, and RR-V12B to determine if they should be included in the IST program.

RESPONSE

RR-V10A/B are the minimum recirculation valves for RR-P1A/B. Their safety function is to automatically open when RR-P1A/B starts and then to close when a signal is received from the Engineered Safeguards System. RR-V10A/B are included in the IST program and have been and will continue to be tested each quarter but they were inadvertently omitted from the IST Submittal (Reference 3). Therefore, please add a line entry to the IST Submittal, Table B-1, Page 29 of 37 as follows: RR-V10A/B, cage guided plug, 2", Diaphragm, 3, B, T/FS, Q/Q.

RR-V12A/B - These vacuum breakers are similar to those addressed in the response to question H.1. Therefore, these valves will also be added to the IST Program.

X. NUCLEAR SERVICES CLOSED CYCLE COOLING WATER SYSTEM

QUESTION

X.1 Review the safety function of the following valves to determine if they should be categorized A.

RR-V3A
RR-V3B
RR-V3C
RR-V4A
RR-V4B
RR-V4C
RR-V4D

RESPONSE

RR-V3A/B/C and RR-V4A/B/C/D are isolation valves for the Reactor Building emergency cooling coils and they open automatically post-accident. In addition these valves are in a Seismic Category I piping system which is a closed loop within the reactor building; therefore, they are not Category A valves.

QUESTION

X.2 Provide a more detailed technical justification for not full-stroke exercising the following valves quarterly during power operation and cold shutdowns.

RR-V8A
RR-V8B
RR-V9A
RR-V9B
RR-V9C

RESPONSE

Relief has previously been granted per Item 4.7.1.1 of SER (Reference No. 2).

RR-V8A/B, RR-V9A/B/C supply/return water to/from the Reactor Building Emergency Cooling Coils. Table B-2 page 6 of the IST Submittal (Reference No. 3) provides adequate technical justification for a refueling interval test. A quarterly or cold shutdown test is not practical because the drainage and flush water from the cooling coils must be considered radioactive waste. To process this drainage and flush water on any other interval except refuelings generates unnecessary radioactive waste.

QUESTION

X.3 Provide the P&ID that shows valve RR-V9D.

RESPONSE

Please delete "RR-V9D" from the submittal. This valve does not exist. This was a typographical error.

QUESTION

X.4 Review the safety function of valves NS-V12 and RR-V6 to determine if they should be included in the IST program.

RESPONSE

NS-V12 performs no direct function in shutting down the reactor or mitigating the consequences of an accident. The valve is normally closed. Its function during plant operation is to keep the Reactor Building Emergency Cooling Coils pressurized when the coils are in standby. The valve should not be included in the IST program.

RR-V6 is a backpressure regulating control valve and is exempt from the IST program by ASME Section XI, IWV-1200, 1980 Edition through Winter 1980 Addenda.

Y. REACTOR BUILDING NORMAL COOLING SYSTEM

QUESTION

Y.1 What is the purpose of this system?

RESPONSE

The purpose of the Reactor Building Normal Cooling System is to provide non-safety grade cooling to the Reactor Building during normal plant operation. This system automatically isolates upon receipt of a containment isolation signal. In Reference No. 1, Table B-1, Page 30, please reverse entry "R/Q/C" under "System/ISI Drawing No." Column with entry "Normal Cooling Water" under "Test Frequency" Column.

QUESTION

Y.2 Is valve RB-V7 motor operated as indicated in the IST program or pneumatic as indicated on the ISI Boundary sketch.

RESPONSE

RB-V7 is motor operated. The ISI Boundary Drawing will be revised to show this modification.

QUESTION

Y.3 Provide the specific technical justification for not full-stroke exercising valves RB-V7 and RB-V2A quarterly during power operation.

RESPONSE

RB-V7 and 2A are part stroked each quarter. They are not full stroke tested because this would isolate normal cooling water to the Reactor Building atmospheric cooling coils. If, in the unlikely event, RB-V7 or 2A are not reopened, this could quickly lead to violation of Reactor Building air temperature Limiting Condition for Operation (Tech. Spec. 3.17) requiring plant shutdown. This agrees with the NRC's staff position (Reference No. 1) which states "valves whose failure in a non-conservative position during the cycling test would cause a loss of system function should not be exercised."

QUESTION

Y.4 Review the safety function of valve RB-V2 to determine if it should be included in the IST program.

RESPONSE

Check valve RB-V2 was initially a CIV, but TMI-1 added RB-V2A because of Appendix J testability concerns. RB-V2A is the Technical Specification designated CIV; therefore, RB-V2 has no safety function.

Z. REACTOR BUILDING SPRAY SYSTEM

QUESTION

Z.1 Review the safety function of the following valves to determine if they should be categorized as indicated.

Catetory A	Category A/C
BS-V1A	BS-V30A
BS-V1B	BS-V30B

RESPONSE

These valves are isolations for the Reactor Building Spray System. They open post-accident and receive no automatic closing signal. In addition this Seismic Category I piping system is essentially a closed loop outside the Reactor Building; therefore, BS-V1A/B, 30A/B are not Category A valves.

QUESTION

Z.2 How are valves BS-V30A and BS-V30B partial-stroke exercised quarterly? In reference to full-stroke exercising these valves, the NRC position is that a sample disassembly program of inspection is an acceptable means of full-stroke exercising check valves and should be performed at each refueling outage.

RESPONSE

Relief has been previously granted for the full stroke test of BS-V30A/B in Reference No. 4.

BS-V30A/B are part stroked by attaching a nitrogen bottle (~200 psig) to BS-V47A/B and then forcing nitrogen through BS-V30A/B. For IST purposes, BS-V30A was disassembled in June 1984 and was found to be in good condition (no unusual degradation and free to open). If disassembly/inspection reveals that the full stroke capability of the disassembled valve may be in question, the other valve will be disassembled and inspected at the same outage.

QUESTION

Z.3 How are valves BS-V23A and BS-V23B full-stroke exercised quarterly?

RESPONSE

BS-V23A/B are full stroked each quarter per SP 1300-3A by placing BS-P1A/B on recirculation of the BWST.

QUESTION

Z.4 In reference to valves BS-V52A and BS-V52B, the NRC position is that a sample disassembly program of inspection is an acceptable means of full-stroke exercising check valves and should be performed at each refueling outage.

RESPONSE

Relief has been previously granted by Reference No. 4 allowing disassembled inspection of BS-V52A/B on a 10 year interval. Both valves were disassembled and inspected in January 1984 and found to be in "like new" condition. Additionally, these valves are of corrosion-resistant stainless steel and are in a system which is static (i.e., there is no flow in this system except under accident conditions).

QUESTION

Z.5 Are there any vacuum breakers that perform a safety function installed on the sodium hydroxide tank?

RESPONSE

A common relief valve/vacuum breaker (BS-V38) connects to the vapor space at the top of the Sodium Hydroxide Storage Tank. The tank is also vented to the atmosphere via valve BS-V12B which is administratively kept locked open. The venting capacity of the 3" BS-V12 valve is more than adequate to assure the tank is maintained at an atmospheric pressure during design drawdown. The vacuum breaker is therefore redundant to the vent line and does not perform any safety function.

AA. REACTOR COOLANT SYSTEM

QUESTION

AA.1 What is the safety function of valves RC-V1 and RC-V3?

RESPONSE

RC-V1's function is control of RCS pressure. During a transient which increases RCS pressure, RC-V1 opens to allow for cooler water to spray into the pressurizer, thus condensing steam and reducing RCS pressure.

Should the RC-V1 valve fail open, cooler water would continue to flow into the pressurizer, reducing pressure to below the normal operating point. For this reason the line also contains RC-V3, which can be used to control flow of cooler water to the pressurizer should the RC-V1 valve fail open. These valves have no essential safety function but are important to plant operation.

QUESTION

AA.2 Review the safety functions of valves RC-V4 and RC-V23 to determine if they should be categorized A and A/C respectively.

RESPONSE

RC-V4 and RC-V23 are only used to spray the pressurizer when RCS pressure is less than 400 psig. During normal plant operation these valves are shut and do not automatically open; therefore, they are entirely passive (RC-V4 is procedurally required to be shut when the RCS is greater than 400 psig). Their leak tightness will be verified by current RCS leakage calculations.

RC-V4 and RC-V23 are included in the GPUN Appeal (Reference No. 5) of certain Amendment No. 71 SER IST Open Items which we understand is currently under review by CRGR.

DH-V64 and DH-V69 are the containment isolation valves in the RC-V4/23 related line. The DH valves are leak tested per Appendix J requirements and are categorized as Category A and A/C, respectively.

QUESTION

AA.3 Is RC-RV2 utilized for low-temperature overpressurization protection of the RCS at TMI-1?

RESPONSE

Per T.S. 3.1.12.1, RC-RV-2 is utilized for low temperature overpressurization protection of the RCS.

BB. SPENT FUEL COOLANT SYSTEM

QUESTION

BB.1 Review the safety function of the following valves to determine if they should be included in the IST program.

Category B	Category C
SF-V1/2/3/4/5/6	SF-47
	SF-48
SF-V11/12/13/14/15/16	SF-V50
	SF-V51

RESPONSE

SF-V1/2/3/4/5/6 and SF-V11/12/13/14/15/16 do not provide a safety function. These valves are used for maintenance and for system alignment. The positions of these valves may be changed to accomplish various system alignments. The failure of any valve in any position (close/open) cannot affect the safety function of the system because of the following:

a) These are redundant flow paths to provide cooling water to the spent fuel pool.

b) Even if valve failures occurred, the time to reach pool boiling will allow enough time to fix the problem and return the spent fuel pool cooling system to service. Therefore, addition of these valves to the IST program is not required.

SF-V47 does not provide a safety function. This is a manually operated valve used for maintenance and for system alignment. Valve SF-V47 should be open when the purification of the pool B is scheduled. Failure of this valve cannot affect the safety of the plant because of the following:

a) There are alternate flow paths to provide pool and water purification.

b) Interruption of pool water purification does not violate the Tech. Spec. requirements. Therefore, addition of this valve to the IST program is not required.

SF-V50 and SF-V51 do not provide a safety function. These valves prevent the backflow from the spent fuel pool if a drain valve in the system is opened. The physical piping configuration does not allow pool level to be siphoned below a safe level. Therefore, the inclusion of the valves in the IST program is not required.

SF-V48 is open at all times except when no fuel is present in the pool and draining is desired. Therefore, no safety function is performed by the valve during normal system operation.

CC. RIVER WATER SYSTEM

QUESTION

CC.1 Review the safety function of the following valves to determine if they should be included in the IST program and categorized as indicated.

Category B	Category C
SW-V24A	SW-V6A
SW-V24B	SW-V6B
SW-V23A	SW-V8A
SW-V23B	SW-V8B

RESPONSE

SW-V24A/B are temperature control valves, and therefore, excluded from the IST Program by ASME Section XI, IWV-1200(a).

SW-V23A/B are the strainer blowdown valves for SW-P1A/B. Strainer differential pressure is alarmed in the control room. SW-V23A/B usually operate on a timed mode. They have no safety function and are installed for operator convenience.

SW-V6A/B is the vacuum breaker on the discharge of SW-P2A/B. These vacuum breakers are similar to those addressed in the response to question H.1. Therefore, these valves will also be added to the IST program.

SW-V8A/B - These vacuum breakers are similar to those addressed in the response to question H.1. Therefore, these valves will also be added to the IST program.

DD. MISCELLANEOUS QUESTIONS AND COMMENTS

QUESTION

DD.1 Provide a more detailed technical justification for not full-stroke exercising the valves and testing the pumps identified in Relief Request IV and Pump Note 12, respectively, during cold shutdown.

RESPONSE

CA-P1A/B; WDL-P13A/B and associated valves are included in the GPUN Appeal (Reference No. 5) of certain Amendment No. 71 SER IST Open Items which we understand is currently under review by CRGR.

Testing at cold shutdown generates additional radioactive waste that must be processed. A refueling test is adequate to demonstrate the operability of these components. In addition, quarterly testing of some of the associated valves without testing the pumps provides little or no additional increase in operational readiness.

QUESTION

DD.2 Provide an explanation of the alternate test methods that have been investigated to verify operability of main feedwater check valves FW-V12A and FW-V12B. (Reference Relief Request X).

RESPONSE

See Question M.1 Response.

QUESTION

DD.3 Since Technical Specification required testing is typically utilized to verify system operability and Section XI required testing is utilized to verify individual component operability, then testing in accordance with Technical Specifications may not meet the requirements of Section XI. Therefore, provide the specific technical justification for not testing components identified in Relief Request III whose function is important to safety at the Code specified frequency.

RESPONSE

The Technical Specifications as indicated provide for system operability testing, whereas the testing performed under ASME Section XI verifies individual component operation. In certain instances, however, the technical specifications testing can accomplish both system and component operability, since a component malfunction or component degraded condition will lead to both decreased overall system and component performance.

For example, using the relief request III of Table B-2 (Reference No. 3) for HPI check valves, the testing of these valves during power operation would lead to an undesirable transient to the HPI nozzles by injecting cold BWST water into a hot RCS. By design, the number of allowable thermal cycles is limited. The system is tested on a refueling interval basis to verify adequacy for accident mitigation. By measuring flows through each HPI injection line, system adequacy is shown and at the same time it is also shown that the respective valves have opened sufficiently to pass the required flow, likewise demonstrating valve operability.

QUESTION

DD.4 Are the boric acid recycle pumps and/or boric acid pumps utilized to establish the proper boron concentration in the RCS when approaching cold shutdown conditions?

RESPONSE

CA-P1A or B, or WDL-P13A or B (one or perhaps more, dependent on which tanks contain boric acid of the proper concentration) are used to establish boron concentration in the RCS when approaching cold shutdown. During plant operation, boron may be reclaimed and stored in the RBAT (or the RBAT may be empty). Then, when the plant is shutdown, the reclaimed boric acid may be used to increase the RCS boron concentration prior to a normal plant cooldown. During emergency conditions, the BWST is the primary source to borate the plant.

QUESTION

DD.5 Provide a detailed technical justification for not full-stroke exercising and stroke timing the following valves quarterly in accordance with Section XI.

WDL-V49	WDL-V89
WDL-V50	WDL-V90
WDL-V61	WDL-V91
WDL-V62	WDL-V92

RESPONSE

See DD.1 response.

II. PUMP TESTING PROGRAM

A. EMERGENCY FEEDWATER SYSTEM

QUESTION

A.1 Is instrumentation available to allow measurement of flow (Q) while testing the EFW pumps? (Note 9 does not agree with Section XI, 1980 Edition).

RESPONSE

Flow rate instrumentation is available. However, ASME Section XI, IWP-4120 scale range criteria cannot be achieved. EF-P1, and EF-P2A/B testing is conducted on recirculation to the Condensate Storage Tanks. Installed orifices limit flow rate to a fixed value. Flow rate is the independent variable and ΔP is the dependent variable. This testing method agrees with ASME Section XI, IWP-3100 requirements. Third line of Table A-2 of the Pump Submittal, add Δ prior to P.

B. NUCLEAR SERVICE RIVER WATER SYSTEM

QUESTION

B.1 Do plant heat loads during cold shutdowns require operation of more than one nuclear service river water pump? Can individual pump flow rates be measured at that time?

RESPONSE

For cold shutdowns of short duration, heat loads (i.e., Radwaste Evaporator) do not allow operation of only one pump.

C. NUCLEAR SERVICE CLOSED COOLING WATER SYSTEM

QUESTION

C.1 Do plant heat loads during cold shutdowns require operation of more than one nuclear service closed cooling water pump? Can individual pump flow rates be measured at that time?

RESPONSE

Same as B.1 response

D. REACTOR BUILDING EMERGENCY COOLING SYSTEM

QUESTION

D.1 Provide the P&ID that shows the flow path utilized during reactor building emergency cooling pump quarterly testing.

RESPONSE

FO-002 shows the flow path for RR-P1A/B quarterly testing. Quarterly testing is conducted with RR-V10A/B fully open and pump discharge valve RR-V1A/B closed. This produces a fixed flow rate through RR-V10A/B.

QUESTION

D.2 Provide the specific technical justification for not performing the reactor building emergency cooling pump complete Section XI testing during cold shutdowns instead of refueling outages.

RESPONSE

This item has the same justification as Question X.2 response.

E. SCREEN WASH SYSTEM

QUESTION

E.1 In reference to the pump flow measurement, the present NRC position is that lack of installed instrumentation is not sufficient justification for not performing the required Section XI testing.

RESPONSE

Relief has been previously granted for measuring flow rate as described in Item 3.4(a) of SER for Amendment No. 71 to TMI-1's Technical Specifications.

SW-P1A/B supply spray water to the River Water Traveling Screens and Sluice Canal. Adequate flow rate is visually verified. This is adequate for this type of pump application because the pump's design function is more concerned with providing adequate flow velocity (to wash screen debris down an open sluiceway to an open trash pit) than it is with flow rate for heat removal as it is with most other IST pumps.

Limiting Value of Stroke Time for IST Motor Operated Valves

VALVE	LIMITING STROKE TIME (Sec.)	OPEN or CLOSE
1. AH-V1A	< 1.0	CLOSE
2. AH-V1D	< 1.0	CLOSE
3. AH-V1B	< 2.0	CLOSE
4. AH-V1C	< 2.0	CLOSE
5. BS-V1A	20	OPEN
6. BS-V1B	20	OPEN
7. BS-V2A	27	OPEN
8. BS-V2B	25	OPEN
9. BS-V3A	65	OPEN
10. BS-V3B	60	OPEN
11. CA-V1	27.8	CLOSE
12. CA-V2	2	CLOSE
13. CA-V3	20.5	CLOSE
14. CA-V4A	25.5	CLOSE
15. CA-V4B	22.8	CLOSE
16. CA-V5A	2	CLOSE
17. CA-V5B	2	CLOSE
18. CA-V13	8.6	CLOSE
19. CA-V189	5.9	CLOSE
20. CF-V2A	23.3	CLOSE
21. CF-V2B	18.3	CLOSE
22. CF-V19A	3.0	CLOSE
23. CF-V19B	3.0	CLOSE
24. CF-V20A	3.0	CLOSE
25. CF-V20B	3.0	CLOSE
26. CM-V1	2	CLOSE
27. CM-V2	2	CLOSE
28. CM-V3	2	CLOSE
29. CM-V4	2	CLOSE
30. DH-V1	144	OPEN
31. DH-V2	144	OPEN
32. DH-V3	120	OPEN
33. DH-V4A	12	OPEN
34. DH-V4B	12	OPEN
35. DH-V5A	13	OPEN

VALVE	LIMITING STROKE TIME (Sec.)	OPEN or CLOSE
36. DH-V5B	13	OPEN
37. DH-V6A	86.25	OPEN
38. DH-V6B	83.75	OPEN
39. DH-V7A	25.4	OPEN
40. DH-V7B	26.3	OPEN
41. DR-V1A	188	OPEN
42. DR-V1B	188	OPEN
43. EF-V4	39	OPEN
44. EF-V5	41	OPEN
45. EF-V30A	7.5	OPEN
46. EF-V30B	7.5	OPEN
47. HM-V1A	2	OPEN
48. HM-V1B	2	OPEN
49. HM-V2A	2	OPEN
50. HM-V2B	2	OPEN
51. HM-V3A	2	OPEN
52. HM-V3B	2	OPEN
53. HM-V4A	2	OPEN
54. HM-V4B	2	OPEN
55. HR-V22A	2	OPEN
56. HR-V22B	2	OPEN
57. HR-V23A	2	OPEN
58. HR-V23B	2	OPEN
59. IC-V1A	31	OPEN
60. IC-V1B	28	OPEN
61. IC-V2	38.0	CLOSED
62. IC-V3	18.0	CLOSED
63. IC-V4	15.0	CLOSED
64. IC-V6	3.0	CLOSED
65. MS-V1A	<120	CLOSED
66. MS-V1B	<120	CLOSED
67. MS-V1C	<120	CLOSED
68. MS-V1D	<120	CLOSED
69. MS-V2A	74	CLOSED
70. MS-V2B	74	CLOSED

VALVE	LIMITING STOKE TIME (Sec.)	OPEN or CLOSE
71. MS-V4A	5	OPEN
72. MS-V4B	5	OPEN
73. MS-V10A	33	OPEN
74. MS-V10B	33	OPEN
75. MS-V13A	23	OPEN
76. MS-V13B	23	OPEN
77. MU-V1A	36	OPEN
78. MU-V1B	37	OPEN
79. MU-V2A	31.3	CLOSE
80. MU-V2B	31.7	CLOSE
81. MU-V3	2.0	CLOSE
82. MU-V12	26	CLOSE
83. MU-V14A	14	OPEN
84. MU-V14B	15	OPEN
85. MU-V16A	13.7	OPEN
86. MU-V16B	13.7	OPEN
87. MU-V16C	13.7	OPEN
88. MU-V16D	13.7	OPEN
89. MU-V18	2.0	CLOSE
90. MU-V20	6	CLOSE
91. MU-V25	19.33	CLOSE
92. MU-V26	3.0	CLOSE
93. MU-V36	10	CLOSE
94. MU-V37	11	CLOSE
95. MU-V51	1.7	OPEN
96. MU-V217	9.0	OPEN
97. NR-V1A	183	OPEN
98. NR-V1B	188	OPEN
99. NR-V1C	176	OPEN
100. NR-V4A	196	CLOSE
101. NR-V4B	198	CLOSE
102. NR-V45A	2	OPEN
103. NR-V45B	2	OPEN
104. NR-V45C	2	OPEN
105. NS-V4	33.0	CLOSE

	VALVE	LIMITING STROKE TIME (Sec.)	OPEN or CLOSE
106.	NS-V15	54.0	CLOSE
107.	NS-V35	36.0	CLOSE
108.	NS-V52A	2.0	OPEN
109.	NS-V52B	2.0	OPEN
110.	NS-V52C	2.0	OPEN
111.	NS-V53A	2.0	OPEN
112.	NS-V53B	2.0	OPEN
113.	NS-V53C	2.0	OPEN
114.	PP-V100	4.5	OPEN
115.	PP-V103	17.0	OPEN
116.	PP-V132	18.0	OPEN
117.	PP-V135	4.65	OPEN
118.	RB-V2A	47.0	CLOSE
119.	RB-V7	36.0	CLOSE
120.	RC-V1	7	OPEN
121.	RC-V2	13.8	CLOSE
122.	RC-V3	38	OPEN
123.	RC-V4	32	OPEN
124.	RC-V28	9.5	OPEN
125.	RC-V40A	2.0	OPEN
126.	RC-V40B	2.0	OPEN
127.	RC-V41A	2.0	OPEN
128.	RC-V41B	2.0	OPEN
129.	RC-V42	2.0	OPEN
130.	RC-V43	2.0	OPEN
131.	RC-V44	2.0	OPEN
132.	RR-V1A	183	OPEN
133.	RR-V1B	181	OPEN
134.	RR-V3A	75	OPEN
135.	RR-V3B	75	OPEN
136.	RR-V3C	75	OPEN
137.	RR-V4A	73	OPEN
138.	RR-V4B	73	OPEN
139.	RR-V4C	74	OPEN
140.	RR-V4D	74	OPEN

	VALVE	LIMITING STROKE TIME (Sec.)	OPEN or CLOSE
141.	RR-V5	191	OPEN
142.	RR-V10A	25	OPEN
143.	RR-V10A	29	CLOSE
144.	RR-V10B	29	OPEN
145.	RR-V10B	31	CLOSE
146.	SW-V11A	2	OPEN
147.	SW-V11B	2	OPEN
148.	SW-V17A	2	OPEN
149.	SW-V17B	2	OPEN
150.	WDG-V3	10.5	CLOSE
151.	WDL-V4	2	CLOSE
152.	WDL-V49	2.0	OPEN
153.	WDL-V50	2.0	OPEN
154.	WDL-V61	5.25	OPEN
155.	WDL-V62	2.90	CLOSE
156.	WDL-V89	14.5	OPEN
157.	WDL-V90	7.4	OPEN
158.	WDL-V91	11.4	OPEN
159.	WDL-V92	8.5	OPEN
160.	WDL-V303	19.5	CLOSE
161.	WDL-V304	3.0	CLOSE
162.	WDL-V534	11.1	CLOSE
163.	WDL-V535	5.9	CLOSE