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for the
U.S. Department of Energy

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555
Under Interagency Agreement EY-76-C-02-0016
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INTERIM REPORT

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INFORMAL REPORT

RECOMMENDATIONS TO THE NRC FOR THE SAFETY EVALUATION REPORT OF SAN ONOFRE NUCLEAR POWER STATION INSERVICE INSPECTION AND TESTING PROGRAM REVISION 2

V. LETTIERI, W.C. OSBORNE, AND R.E. HALL

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DEPARTMENT OF NUCLEAR ENERGY BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973

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Recommendations to the NRC for the Safety Evaluation Report of San Onofre Nuclear Power Station Inservice Inspection and Testing Program Revision 2

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Brookhaven National Laboratory
Recommendations to the NRC for the
Safety Evaluation Report of
San Onofre Nuclear Generating Station - Unit 1
Southern California Edison Company
Inservice Inspection & Testing Program
for the 1978-1980 Period
(Docket No. 50-206)

(Submittal dated September 9, 1977)
Revision 1

Executive Summary

At the request of the Nuclear Regulatory Commission's Division of Operating Reactors staff, the Reactor Engineering Analysis Group of Brookhaven National Laboratory (BNL) has conducted a review of the Inservice Inspection and Testing program (ISI/IST) of the San Onofre Nuclear Generating Station - Unit 1, Docket No. 50-206. This is based upon the ISI/IST program as described in Southern California Edison Company's submittal dated September 9, 1977, as clarified by their responses of May 26, 1978 to initial questions. In addition, a meeting with the management of San Onofre, the NRC staff and BNL was held on June 26 and 27, 1978. This analysis reviewed the submitted information to the requirements of Section XI of the ASME B&PV Code.

Mr. W.C. Osborne, consultant to BNL, and Mr. V. Lettieri were principally involved in this evaluation and have based their conclusions on numerous discussions with the NRC staff so as to achieve a review which has program wide consistency.

This review covers two major areas: Inservice Inspection and Inservice Testing of pumps and valves. In the area of Inservice Inspection there were 17 requests for relief. Of these 17 requests BNL recommends 5 should be denied, additional documentation might alter this number. In the area of Inservice Testing, there are 9 requests for relief pertaining to pumps, 5 of which should be denied. The Inservice Testing of valves has 3 relief requests that should be denied at this time.

In summary it has been found that the program, as reviewed and modified by this analysis is in compliance to the extent possible with the requirements set forth in Section XI of the 1974 Edition and Addenda through the Summer 1975 of the ASME Boiler and Pressure Vessel Code as required by 10 CFR 55 a(g).

BNL has evaluated requests and recommended relief from specific requirements which were determined to be impractical for this facility because of limited access, design, geometry, and materials of construction of some components. Several other requests for relief from the requirements should be denied.

This report includes the relief request specific evaluations that are recommended to be included in the NRC's Safety Evaluation Report on the subject of ISI/IST for the San Onofre Nuclear Generating Station - Unit 1. These recommendations are a result of the above described review and do not constitute a completeness evaluation of the San Onofre program.

1.0 INSERVICE INSPECTION PROGRAM

1.1 Relief Request: Relief is requested to permit repairing of defective components in compliance with the requirements of Subsections IWA-4000 and IWB-4000 of Section XI of the ASME B&PVC to the maximum extent practical.

Code Requirement: IWA-4000 and IWB-4000 require that repairs be made in accordance with the specified rules which invoke in some cases the rules of Section III of the ASME-B&PVC. In the event repairs not addressed in the Code are required, the repairs may be made in accordance with the requirements of the original construction Code.

Licensee Basis for Relief Request: The San Onofre Unit #1 was built to Section VIII of the ASME, B&PVC. It is possible that some of the mandatory repair requirements of SEction XI of the Code may be incompatible with the components or material originally supplied. Accordingly it is requested to comply with the requirements of Section XI of the Code to the maximum extent practical.

Evaluation: Due to the fact that this request for relief is vague without set boundaries it should be rejected at this time. Until such time as a technical justification is provided that demonstrates the impracticality of the code requirements we recommend that the licensee comply fully with Section XI of the ASME B&PV Code.

1.2 Relief Request: Subsequent to the adaption of the Inservice Inspection Program, any Code Class 1 or 2 components which are determined to be either entirely or partly inaccessible such that the required examination cannot be performed to the required extent, they shall be examined as completely as possible utilizing the primary mode of examination. Should the component or area be amenable to examination by examination techniques other than the primary mode of examination, there alternate techniques shall be utilized in an effort to ascertain the acceptability of the item.

Code Requirement: The ASME B&PV Code, Section XI Subsections IWB and IWC, hae specific requirements that dictate what examinations and inspections are required, to what extent the examination must be performed, and at what time intervals. In addition Subsection IWA-2240 provides the mechanism by which alternate examinations may be utilized.

Licensee Basis for Relief Request: Components which are known to be inaccessible or to have limited accessibility are so noted in the Inservice Inspection Program. Relief requested is to cover situations that may develop when an actual examination of a specific component or area is attempted.

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Evaluation: Due to the fact that this request for relief is vague without set boundaries it should be denied at this time. Until suchtime as a technical justification is provided that demonstrates the impracticality of the Code requirements, we recommend the licensee comply fully with Section XI of the ASME B&PV Code.

1.3 Relief Request: Subsequent to the adoption of the Inservice Inspection Program, should it be determined that a Code Class 1 or 2 weld or component cannot be examined using the primary mode of examination due to technique limitations (i.e. grain boundaries, through wall thicknesses, geometric interferences, etc.) alternate examination techniques shall be utilized, where feasible, in an attempt to determine the acceptability of the component.

Code Requirement: The ASME B&PV Code, Section XI Subsections IWB and IWC have specific requirements that dictate what examinations and inspections are required, to what extent the examination must be performed and at what time intervals. In addition Subsection IWA-2240 provides the mechanism by which alternate examinations may be utilized.

Licensee Basis for Relief Request: Techniques which are known to be inapplicable are so noted in the Inservice Inspection Program. Relief requested is to cover situations that may develop when an actual examination of a specific component or area is attempted. The Inservice Inspection record shall reflect the reason that it was not possible to examine the component using the primary mode of examination, the alternate examination(s) used, and the results of the alternate examination.

Code Requirement: The ASME B&PV Code, Section XI Subsections IWB and IWC, have specific requirements that dictate what examinations and inspections are required, to what extent the examination must be performed, and at what time intervals. In addition Subsection IWA-2240 provides the mechanism by which alternate examinations may be utilized.

Licensee Basis for Relief Request: Components which are known to be inaccessible or to have limited accessibility are so noted in the Inservice Inspection Program. Relief requested is to cover situations that may develop when an actual examination of a specific component or area is attempted.

Evaluation: Due to the fact that this request for relief is vague without set boundaries it must be denied at this time. Until such time as a technical justification is provided that demonstrates the impracticality of the Code requirements, we recommend the licensee comply fully with Section XI of the ASME B&PV Code.

1.4 Relief Request: An exemption from conducting examinations of the reactor vessel integrally-welded support lugs Class 1 Examination Category BH in accordance with paragraph IWB-2411 of the Code to permit examination at the end of the ten year inspection interval is requested.

Code Requirement: At least 25% of the required examination shall have been completed by the expiration of one-third of the inspection interval (with credit for no more than 33 1/3% if additional examinations are completed) and at least 50% shall have been completed by the expiration of two-thirds of the inspection interval (with credit for no more than 66 2/3%). The remaining required examinations shall be completed by the end of the inspection interval.

Licensee Basis for Relief Request: The reactor vessel support lugs are accessible for examination only from the inside of the vessel. There is less than twelve inches clearance around the outside of the vessel. To examine from the inside of the vessel, it is necessary to remove the core barrel. This is done only once at the end of the inspection interval. This vessel was manufactured in accordance with the rules of Section VIII of the Code, 1959 Edition. Welds were originally surface examined. The three lugs were examined from the inside of the vessel in 1976 using the ultrasonic technique and were found acceptable.

Evaluation: To require the removal of the core barrel more frequently than once each inspection interval solely to inspect the reactor vessel integrally-welded support lugs would impose an undo hardship upon the licensee. However, these important welds require that if the core barrel is removed for any other reason, they shall be inspected at a frequency that meets the intent of the code. Should there be an indication of the deterioration of these welds, the immediate inspection by ultrasonic techniques will be required. In addition should any vessel of similar design and manufacture develop difficulties with these welds an immediate ultrasonic inspection shall be required. A visual inspection from the inside of the vessel will not be productive due to the fact that these are not full penetration welds. Therefore, relief is recommended to inspect these welds once at the end of the inspection interval with the above stated provisions in lieu of the code requirements.

1.5 Relief Request: Exemption from conducting examinations of the reactor vessel cladding patches, Class 1, Category B-I-1, in accordance with paragraph IWB-2411 of the Code to permit examination at the end of the ten year interval.

Code Requirement: At least 25% of the required examination shall have been completed by the expiration of one-third of the inspection interval (with credit for no more than 33 1/3% if additional

examinations are completed) and at least 50% shall have been completed by the expiration of two-thirds of the inspection interval (with credit for no more than 66 2/3%). The remaining required examinations shall be completed by the end of the inspection interval.

Licensee Basis for Relief Request: The six patches on the vessel are accessible for examination only when the core barrel is removed. This is done only at the end of the inspection interval.

Evaluation: To require the removal of the core barrel more frequently than once each inspection interval solely to inspect the reactor vessel cladding patches would impose an undo hardship upon the licensee. Current engineering thought no longer believes an inspection is required of the reactor vessel cladding patches. Therefore the reactor vessel cladding patches are to be examined whenever the core barrel is removed to as closely as possible meet the requirements of IWB-2411. Relief is recommended to perform examinations of the reactor vessel cladding patches as a minimum at the end of every ten year interval and more frequently as core barrel removal allows.

1.6 Relief Request: Exemption from conducting examinations of the reactor coolant pump bolts and studs, Class 1, Category B-G-1, in accordance with Table IWB-2500 and paragraph IWB-2411 of the Code to permit limiting the examination to the studs and bolts on one pump only and to permit conducting this examination at the end of the inspection interval.

Code Requirement: Examinations performed over the inspection interval per IWB-2411 shall cover 100% of the studs and bolts.

Licensee Basis for Relief Request: It is required, Table IWB-2500, Category B-L-1 to open and examine one main reactor coolant pump per inspection interval which examination may be done at the end of the interval. It is proposed to subject the studs and bolts on that pump to a surface and volumetric examination when the B-L-1 examination is conducted. This plan is in accordance with Section XI of the Code as modified by the Winter 1975 Addenda.

Evaluation: The requirements of the 1974 ASME B&PV Code, Addenda thru the Summer 1975 are clear as to what examinations are required. The Licensee's Basis for Relief Request is accurate, however, it is insufficient grounds for relief. Until such time as sufficient documentation to grant relief is presented, reviewed and acted upon the licensee should meet the requirements of the Code.

1.7 Relief Request: Exemption from examination of the dollar plate weld in the closure head, Class 1, Category B-B.

Code Requirement: The examinations performed during each inspection interval shall cover at least 10% of the length of each

longitudinal shell weld and meridional head weld and 5% of the length of each circumferential shell weld and head weld.

Licensee Basis for Relief Request: The dollar plate weld in the closure head is totally inaccessible due to the control rod drive penetration locations. All other closure head welds are examined in conformance with the Code.

Evaluation: Although the dollar plate weld in the closure head is inaccessible for a volumetric examination, some examination of this weld is required, such as a visual examination. The review of the licensee's submittal has indicated that the licensee has not submitted sufficient documentation to justify full relief from Code requirements. Until such time as sufficient documentation is presented, reviewed and acted upon the licensee should meet the requirements of the Code.

1.8 Relief Request: Exemption from surface examination of the lower 270 degrees of the following Class 1, Category BF and Category B-K-2 welds.

Weld Designation		
Nozzle to Safe End Table B-1.6	Safe End to Pipe Table B-4.1	Loop
A-1	A-2	A
A-18	A-17	
B-1	B-2	B
B-18	B-17	
C-1	C-2	C
C-18	C-17	

Code Requirement: Volumetric and surface examinations shall be made of the circumference of 100% of the welds.

Licensee Basis for Relief Request: Only the top 90% (approximately) segment of each reactor vessel-to-safe end weld ad safe end to piping welds are accessible for surface examination. The remaining portion of each weld is not accessible due to physical interference with the reactor cavity shield tanks and the lack of access space to the lower portion of the nozzle, three inch clearance. These welds are examined volumetrically 100%.

Evaluation: The listed circumferential welds are volumetrically examined 100%, and 25% of the surface of each weld is examined. To require 100% surface examination would impose a hardship upon the licensee. The relief requested is recommended.

1.9 Relief Request: Exemption of surge line nozzle connection weld #5013-7 and surge nozzle section from volumetric examination to permit visual examination during leak test of the reactor coolant system.

Code Requirement: Weld and nozzle section shall be volumetrically examined.

Licensee Basis for Relief Request: The surge line nozzle connection and surge nozzle section welds are not accessible due to interference from the pressurizer heaters. The heaters and associated cabling do not permit scanning of the nozzle area. This is a high radiation area. A feasible alternate examination method is to visually examine the area during the leak test of the reactor coolant system. We will use other techniques to examine this weld when they become available.

Evaluation: Since the licensee reports this weld is completely inaccessible and the area of the weld is located in a radiation area, the examination proposed is a reasonable alternative. Also adjacent welds are examined as per the Code. Therefore relief is recommended to allow a visual examination in lieu of the Code requirements with the following stipulations. Should a deterioration of the welds on either side of this weld be indicated an immediate volumetric examination will be required. Should the visual examination of this weld indicates a deterioration of the weld an immediate volumetric examination will be required.

1.10 Relief Request: Exemption from examination of the Class 1, Category B-J reactor coolant piping welds as follows:

Weld Designation Table B-4.5	Loop
A-3	A
A-15	A
A-16	A
B-3	B
B-15	B
B-16	B
C-3	C
C-15	C
C-16	C

Code Requirement: The volumetric examinations performed during each inspection interval shall cover all of the area of 25% of the circumferential joints including the adjoining one foot sections of longitudinal joints and 25% of the pipe branch connection joints.

Licensee Basis for Relief Request: One circumferential weld in each loop is completely encased in concrete. Welds on either side are accessible and are examined per the Code. No credit is taken for these welds when calculating the 25% area requirement. These welds shall be checked for signs of leakage when the system is pressure tested.

Evaluation: For these welds to be volumetrically examined will require the removal of concrete which would subject the licensee to undo hardship. However to take no action is inappropriate, therefore should welds on either side of these welds indicate a deterioration of the side welds is beginning, a volumetric examination of these welds is recommended immediately. Secondly, the pressure test of the system will give an indication of the system integrity. Should this test indicate a leakage in the weld, a volumetric examination of the weld is recommended immediately.

1.11 Relief Request: Exemption from surface examination of the Class 1, Category BJ welds 6006-1, 6007-1 and 6008-1 (Table B-4.7 Page 1) in the safety injection lines, cold legs, loops A, B, and C respectively to permit visual examination conducted at hydrotest.

Code Requirement: The volumetric examinations performed during each inspection interval shall cover all of the area of 25% of the circumferential joints including the adjoining 1 foot sections of longitudinal joints and 25% of the pipe branch connection joints.

Licensee Basis for Relief Request: A concrete sleeve prevents UT or surface examination of these welds.

Evaluation: The plant design precludes any examination except visual as proposed by the licensee to be conducted during the hydrotest. Welds on either side of this weld are examined per the Code. These welds are not part of the 25% area needed to satisfy the Code. The relief requested is recommended.

1.12 Relief Request: Exempt reactor coolant pump supports designated, Table B-5.4, A-1, 2 and 3, B-1, 2 and 3 and C-1, 2 and 3 from examination. These are Class 1, Category B-K-1 welds. Also exempt reactor coolant pump casing welds Class 1, Category B-L-1, designated Table B-5.6, A-1, 2 and 3 and C-1, 2 and 3.

Code Requirement: The volumetric examinations performed during each inspection interval shall cover 25% of the integrally-welded supports and 100% of the pressure retaining welds in at least one pump in each group of pumps performing similar functions.

Licensee Basis for Relief Request: This is a cast stainless steel component. A volumetric examination using ultrasonic techniques is not possible. The metal is approximately seven inches or greater in thickness. It may be possible to examine by x-ray, but a portable unit of sufficient source strength is not currently available to licensee. These pumps were originally made to Section VIII of the ASME B&PVC, 1959.

Evaluation: Since ultrasonic techniques are not possible, and radiographic techniques are not currently available, relief is recommended to perform surface examinations of the welds in lieu of the volumetric examination required per the Code, until such time as radiographic techniques are available.

1.13 Relief Request: Exempt from volumetric examination 90 degrees of each of the following Class 2, Category C-F welds, Table C-2.1:

Description	Weld Designation
Pipe to elbow	6008-18
Pipe to elbow	6007-14
Elbow to pipe	6008-15

Code Requirement: All welds shall be 100% volumetrically examined during the 40 year period.

Licensee Basis for Relief Request: The shield wall prevents further examination of welds 6006-18 and 6007-14. Electrical conduit prevents further examination of weld 6008-15.

Evaluation: To require the licensee to examine 100% of these welds volumetrically would cause an undo hardship. 75% of these welds are being examined by volumetric examination. Relief is recommended to examine 75% of the required weld in lieu of the Code required 100% of the weld, until such time as an indication of weld deterioration. If any of these welds indicate a deterioration, the weld will be immediately volumetrically examined 100%.

1.14 Relief Request: Exemption of the Class 2, Category C-F feedwater piping welds 201, 205 and 209 from volumetric examination to permit surface examination.

Code Requirement: Volumetric examination.

Licensee Basis for Relief Request: Feedwater welds 201, 205, and 209 are the welds joining the three feedwater lines to each of their respective containment penetrations. These welds cannot be ultrasonically tested due to their geometric configuration since each of these welds is a fillet weld joining the process line to the containment penetration. The physical construction of this type of weld precludes a meaningful ultrasonic examination due to numerous and interfering reflections obtained during examination. These conflicting reflectors obfuscate the examination results and render them inconclusive. Surface examination is proposed as an alternate examination method.

Evaluation: Due to the fact that current volumetric examination techniques cannot provide meaningful results for these welds, relief is recommended to perform surface examinations of the welds in lieu of the Code required volumetric examination.

1.15 Relief Request: Exemption from 100% volumetric examination of Class 2 weld 6019-7 and supplement with 100% surface examination.

Code Requirement: All welds shall be 100% volumetrically examined.

Licensee Basis for Relief Request: Structural lugs make 100% volumetric examination not possible. The weld will be examined volumetrically to the maximum extent possible and the weld will be subject to a 100% surface examination.

Evaluation: Plant design does not allow a 100% volumetric examination of this weld. Therefore relief is recommended to perform a volumetric examination to the maximum extent possible and compliment this with a 100% surface examination of the weld.

1.16 Relief Request: Exemption from examination of the elbow to pipe weld shown on Page 31 of 44, Table C-2.1.

Code Requirement: All welds shall be 100% volumetrically examined during the 40 year period.

Licensee Basis for Relief Request: This weld is completely inaccessible due to the concrete shield wall. Similar welds on either side of this weld are examined in accordance with the Code.

Evaluation: To require examination of this weld would impose a hardship on the licensee. The relief requested is recommended.

1.17 Relief Request: Request to use 100% of the reference level as the evaluation criterion for indications detected during ultrasonic examination of all piping welds.

Code Requirement: Ultrasonic examination shall be conducted in accordance with the provisions of Appendix I. Where Appendix I is not applicable, the provisions of Article 5 of Section V shall apply.

Licensee Basis for Relief Request: Evaluation of indications at 20% of the reference level increases the number of indications which have to be evaluated by a very significant amount. To evaluate and record the numerous indications would require examination personnel to stay longer periods of time in radiation areas.

Evaluation: Evaluating indications at or above the 20% reference level places a great burden on the licensee. The 100% reference level evaluation is judged sufficiently reliable for detection of defects warranting evaluation. As an interim measure, we recommend relief be granted from the 20% reference level evaluation criterion provided the following are incorporated in the ultrasonic examination procedure:

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a. All indications at or above 50% DAC shall be recorded.
b. All indications 100% DAC or greater shall be recorded and evaluated in accordance with the rules of Section XI.
c. Indications 20% DAC or greater which are interpreted to be a crack must be identified and evaluated to the rules of Section XI.

2.0 PUMPS - INSERVICE TESTING PROGRAM

2.1 General

2.1.1 Inservice Testing of Pumps Which Perform a Safety Related Function

The fuel oil transfer pumps are essential to the operation of the emergency diesel power source. These are Class 3 pumps. The licensee has agreed to include them in his inservice testing program, and until a relief request is approved the licensee should comply with the ASME B+PV Code Section XI.

2.2 Feedwater Pumps (G-3A, G-3B)

2.2.1 Relief Request: Exempt the feedwater pumps G-3A and G-3B (east and west respectively) from having their individual flow rates measured in order to permit the measurement of their total flow and amps to each pump driver as an alternative to the Code requirement.

Code Requirement: The flow rate of each pump shall be measured.

Licensee Basis for Relief Request: The flow meters are located after the manifold and is fed by all the feedwater pumps, thus each pump's individual flow rate cannot be obtained. Input amps to each motor shall be measured monthly.

Evaluation: The measurement of the total flow rate verifies the adequacy of the total system. The measurement of the driver input amps compared to a reference value or values will indicate for a given system, the load condition of each pump. This is the intent of the Code and accordingly the relief requested should be granted for the above listed pumps.

2.3 Residual Heat Removal System Pumps (G-14A, G-14B)

2.3.1 Relief Request: Exempt the residual heat removal pumps, G-14A and G-14B (east and west, respectively) from being tested monthly, in order to permit them to be tested at each refueling outage instead of the Code requirement.

Code Requirement: Pumps shall be tested monthly.

Licensee Basis for Relief Request: Pumps G-14A and G-14B can only be tested at very low flow afforded by a small three-quarter inch by-pass line. This operating mode will most likely damage the pumps if run long enough to obtain Code specified measurements. Thus, as a result, it is desired to test them at a refueling outage when they (the pumps) will normally be used.

Evaluation: G-14A and G-14B are two very important pumps that must be exercised more frequently than just once a refueling outage. The licensee agrees that a test in full compliance with the Code

can be performed at each cold shutdown. This relief request, however, should be rejected at this time. As a minimum these pumps should be tested at cold shutdowns at a frequency that will allow them to meet the intent of Section XI requirements. In addition, the licensee should provide documentation that supports the determination that these pumps cannot be tested monthly.

2.4 Refueling Water Pumps (G-27N, G-27S)

2.4.1 Relief Request: Exempt the refueling pumps, G-27N and G-27S (north and south, respectively) from being tested in accordance with the Code in order that they be allowed to be tested monthly at shut-off per tech. spec. 4.2.II A and B, and per the Code at each refueling outage.

Code Requirement: The above listed pumps shall be tested monthly and the measurements specified in Table IWP-1100.1 are to be made and recorded. The bearing temperature must be checked annually.

Licensee Basis for Relief Request: Operation of the refueling water pumps for a sustained period may place the plant in an unsafe condition. Failure of either of the two automatic valves can cause sphere spray to be initiated. These pumps are tested monthly against the shut-off head. They cannot be run long enough to obtain a meaningful set of vibration measurements. Also, these pumps are such that, in order to perform their safety function, they are required to run for a very short period of time. Accordingly, it is believed that the measurement of the bearing temperature contributes little to the assurance of pump operability. An inservice test is in complete accordance with the Code and is run at each refueling outage.

Evaluation: The licensee agrees that inlet pressure, discharge pressure and lubricant level or pressure can be determined monthly and that the test shut-off head can be compared to a reference value. Accordingly, these parameters (i.e., inlet pressure, discharge pressure and lubricant level or pressure) should be determined, recorded and analyzed monthly. Since these pumps are used only for emergency and testing purposes, wear can be expected to be minimal. The monthly tests demonstrate operational readiness on a continuing basis and assures that the bearings are regularly lubricated and changed in position. Under these circumstances, the request to measure the bearing vibrations only at refueling outages is recommended. It is also recommended that relief be granted to measure bearing temperature at refueling outages.

2.5 Safety Injection Recirculation Pumps (G-45A, G-45B)

2.5.1 Relief Request: Exempt the safety injection recirculation pumps, G-45A and G-45B (east and west, respectively) from Code testing requirements, in order that they be allowed to have a monthly spin test only, with the pumps dry.

Code Requirement: The above listed pumps shall be tested monthly and the measurements specified in Table IWP.1100.1 to be made and recorded.

Licensee Basis for Relief Request: Pumps G-45A and G-45B are canned pumps inside the containment. They recirculate the water initially injected in the event of an incident within the containment. Under normal conditions, the inlet and discharge systems associated with these pumps are dry. Water is available to these pumps only following an incident and the injection of water into the containment. Thus it is not practical for one to obtain the hydraulic measurements as required by the Code. It is possible to electrically jog the pumps monthly to demonstrate their response to a start signal. However, since no cooling is available, these canned pumps cannot run long enough to check vibration, and stability could not be obtained to measure the bearing temperature.

Evaluation: The above listed pumps (namely G-45A and G-45B) are important pumps that require some testing be performed periodically to demonstrate their ability to function properly. The review of the licensee's submittal has indicated that the licensee has not submitted sufficient documentation to justify full relief from Code requirements. Until such documentation is presented, reviewed and acted upon, we recommend the licensee meet the requirements of the code.

2.6 Safety Injection Pumps (G-50A, G-50B)

2.6.1 Relief Request: Exempt the safety injection pumps, G-50A and G-50B (east and west respectively) from the measurement of flow rate and bearing temperature when tested.

Code Requirement: Flow rate shall be measured monthly and bearing temperature every 12 months.

Licensee Basis for Relief Request: There is no flow metering equipment in the safety injection pump suction or discharge lines. There is also no equipment installed to measure bearing temperature. These pumps perform their safety function in a matter of minutes. It is questioned whether the bearing temperature is a meaningful parameter in this case.

Evaluation: All other parameters, except flowrate, required by the Code are measured. Since these pumps are required to operate for a

short period of time to perform their safety function, the measurement of bearing temperature contributes very little to the assurance of operational readiness of these pumps. Accordingly, the request for relief from measuring bearing temperature every twelve months is recommended.

The relief request for measuring flowrate should not be granted at this time. The review of the licensee's submittal has indicated that the licensee has not submitted sufficient documentation to justify full relief from Code requirements. Until such time as sufficient documentation is presented, reviewed, and acted upon we recommend the licensee meet the requirements of the Code.

2.7 Hydrazine Spray Pumps (G-200A, G-200B)

2.7.1 Relief Request: Exempt the hydrazine pumps, G-200A and G-200B from the measurement of bearing temperature.

Code Requirement: Bearing temperature shall be measured once every twelve months.

Licensee Basis for Relief Request: No instrumentation is provided to measure the bearing temperature. The hydrazine spray pumps perform their safety function in a matter of minutes. It is questioned whether the temperature measurement is meaningful in this case.

Evaluation: Since all other parameters required by the Code are measured for the hydrazine pumps and since they are required to operate for a short period of time to perform their safety function, the measurement of bearing temperature contributes very little to the assurance of operational readiness of these pumps. Accordingly, the request for relief is recommended.

2.8 Auxiliary Feedwater Pumps (G-10, G10S)

2.8.1 Relief Request: Exempt the auxiliary feedwater pumps, G-10 and G-10S from the requirement to measure flowrate and bearing temperature.

Code Requirement: Flowrate shall be measured monthly and bearing temperature every twelve months.

Licensee Basis for Relief Request: No instrumentation is provided to measure the flowrate or the bearing temperature.

Evaluation: These pumps are required to run for extended periods of time, and therefore bearing temperature and flowrate should be measured as required. The review of the licensee's submittal has indicated that the licensee has not submitted sufficient documentation to justify full relief from Code requirements. Until such time as sufficient documentation is presented, reviewed and acted upon, we recommend the licensee meet the requirements of the Code.

2.9 Saltwater Cooling Pumps (G-13A, G-13B)

2.9.1 Relief Request: Exempt the Saltwater cooling pumps G-13A and G-13B (north and south respectively) from measuring the vibration levels, the lubricant level or pressure. and the bearing temperature.

Code Requirement: Vibration measurements shall be made and lubricant level or pressure checked monthly. The bearing temperature shall be measured every twelve months.

Licensee Basis for Relief Request: These are vertical turbine type pumps and the pump bearings are in the column pipe, water lubricated and inaccessible.

Evaluation: These two vertical turbine pumps are driven by hollow shaft motors. The pumps' thrust bearings are in the motors. Accordingly, per IWP-1200, it is required that the motor bearings be monitored for vibration, temperature and adequate lubrication. The licensee has agreed to include in his in-service testing program the measurement of motor bearing vibration and temperature and the observation of motor oil level. This brings the licensee's program into full compliance with the Code and no relief is required.

2.10 Component Cooling Water Pumps (G-15A, G-15B, G-15C)

2.10.1 Relief Request: Exempt the component cooling water pumps G-15A, G-15B and G-15C (north, center and south respectively) from measuring their individual flowrates in order that they be permitted the measurement of their total system flow. Also to exempt these pumps from measuring bearing temperature.

Code Requirement: Flowrate of each pump shall be measured monthly and the bearing temperature measured every twelve months.

Licensee Basis for Relief Request: Instrumentation is not provided to measure individual pump flowrate or bearing temperature.

Evaluation: As an alternative, the licensee has agreed to measure amps to each motor and to compare them to the reference amp values. Thus the total flow measured will show system capability and the individual electrical readings will detect any major component deviations.

The licensee has agreed to review the feasibility of installing bearing temperature measuring equipment on these pumps. Since all other Code requirements are being met, the licensee has proposed an acceptable alternative to measuring the flowrate, and has a plan to investigate the feasibility of adding the required temperature measuring instrumentation, it is recommended that the relief be granted.

3.0 VALVES - INSERVICE TESTING PROGRAM

3.1 General

3.1.1 The scope of this review is limited to those valves which perform a safety related function. Safety related valves, for the purpose of IST, have been defined as those valves that are necessary to function to safely shutdown the plant and/or mitigate the consequences of an accident. As a minimum, all valves that receive a containment isolation signal or a safety injection signal shall be included in the IST program.

The following guidelines were developed after review of some initial IST programs.

3.1.2 Leak Testing of Valves which Perform a Pressure Isolation Function

There are several systems connected to the reactor coolant pressure boundary that have design pressures that are below the reactor coolant system operating pressure. The NRC has required that valves forming the interface between these high and low pressure systems have sufficient redundancy to assure that the low pressure systems are not subjected to pressures which exceed their design limits. In this role, the valves are performing a pressure isolation function.

It is the NRC's view that the pressure isolation redundancy provided by these valves is important. The NRC considers leak testing each valve to be necessary in order to insure that the condition of these valves is adequate to maintain the integrity of this redundancy. For this reason it is the staff's belief that the following valves should be categorized as A or AC and leak tested in accordance with IWV-3420 of Section XI of the ASME B&PV Code. The staff has discussed this matter with the licensee at a meeting held on June 26, 1978 at the San Onofre Nuclear Generating Station. The NRC (represented by V. Nerses) presented the following list of valves to the licensee:

MOV-813 (Auxiliary Coolant System Drawing No. 5687-68)
MOV-814 (Auxiliary Coolant System Drawing No. 5687-68)
MOV-833 (Auxiliary Coolant System Drawing No. 5687-68)
MOV-834 (Auxiliary Coolant System Drawing No. 5687-68)
MOV-850A (Safety-Injection System Drawing No. 5687-69)
MOV-850B (Safety-Injection System Drawing No. 5687-69)
MOV-850C (Safety-Injection System Drawing No. 5687-69)
MOV-356 (Safety-Injection System Drawing No. 5687-69)
MOV-357 (Safety-Injection System Drawing No. 5687-69)
MOV-358 (Safety-Injection System Drawing No. 5687-69)

Check Valves:

867A-6-C58 (Safety-Injection System Drawing No. 5687-69)
867B-6-C58 (Safety-Injection System Drawing No. 5687-69)
867C-6-C58 (Safety-Injection System Drawing No. 5687-69)
FCV-1115D (Chemical and Volume Control System Drawing No. 5687-67)
FCV-1115E (Chemical and Volume Control System Drawing No. 5687-67)
FCV-1115F (Chemical and Volume Control System Drawing No. 5687-67)

It is the belief of Brookhaven National Laboratory that in accordance with IWV-1400 of Section XI of the ASME B&PV Code, 1974 Addenda thru Summer 1975 that the Owner shall determine valve categorization. It is recommended to the NRC that a position be taken that informs the Owner of the requirement to identify pressure isolation valves. After such an identification has been completed, the valve listing then may be reviewed.

3.1.3 Containment Isolation Valves

The Appendix J review for this plant is a completely separate review from this IST program review. However, the determinations made by that review are directly applicable to the IST program. The present IST submittal should be acceptable until the Appendix J review is completed. At that time, the licensee will be required to amend his IST program to reflect the conclusions of the Appendix J review.

3.1.4 Category A Valve Leak Check Requirements for Containment Isolation Valves (CIV)

All CIVs shall be classified as Category A valves. The Category A valve leak rate test requirements of IWV-3420 (a-e) have been superceded by Appendix J requirements for CIVs. The staff has concluded that the applicable leak test procedures and requirements for CIVs are determined by 10 CFR 50 Appendix J. Relief from paragraph IWV-3420 (a-e) for CIVs presents no safety problem since the intent of IWV-3420 (a-e) is met by the Appendix J requirements.

Sections f and g of IWV-3420 must be met by the licensee otherwise relief must be requested from these paragraphs. It should be noted that these paragraphs are only applicable where a type C Appendix J leak test is performed.

The safety function of CIVs and thus passive CIVs is to perform leak limiting barriers. These are valves, which are normally closed, thus in their safety position, and are not required to open to mitigate the consequences of an accident or to safely shutdown the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function for which they perform. It is thus concluded that the quarterly stroke and stroke time measurement are meaningless for passive CIVs.

3.1.5 Stroke Requirements for Passive Valves

These valves are normally closed and thus in their safety-related position, and are not required to change position, that is to open or close to mitigate the consequences of an accident or to safely shutdown the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function for which they perform. It is thus concluded that the quarterly stroke and stroke time measurement are meaningless for passive valves.

3.1.6 Valves to be Tested at Cold Shutdowns

Valve testing should commence not later than 48 hours after shutdown, and continue until complete or plant is ready to return to power. Completion of all valve testing is not a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during subsequent cold shutdowns to meet the Code specified testing frequency.

In the case of valves exercised less frequently than cold shutdown (i.e., refueling), relief from the Code requirement must be requested. These cases are treated as such in this review.

3.1.7 Valve Exercising Requirements

ASME Code, Section XI, Subsection IWV-3410(a) requires that Code Category A and B valves be exercised once every 3 months, with the exceptions as defined in IWV-3410(b-1), (e), and (f). IWV-3520(a) requires that Code Category C valves be exercised once every 3 months, with the exceptions as defined in IWV-3420(b). IWV-3700 requires no regular testing for Code Category E valves. Operational checks, with appropriate record entries, shall record the position of these valves before operations are performed and after operations are completed and shall verify that each valve is locked, or sealed. The limiting value of full stroke time for each power operated valve shall be identified by the owner and tested in accordance with IWV-3410(c). In the above exceptions, the Code permits the valves to be tested at cold shutdown where:

a. It is not practical to exercise the valves to the position required to fulfill their function or to the partial position during plant operation.

b. It is not practical to observe the operation of the valves (with fail-safe actuators) upon loss of actuator power.

3.1.8 Changes to the Technical Specifications

In a November 1976 letter to the Southern California Edison Company, the NRC provided an attachment entitled "NRC Staff Guidelines for Excluding Exercising (Cycling) Tests of Certain Valves During Plant Operation." The attachment stated that when one train of a redundant system such as in the ECCS is inoperable, nonredundant

valves in the remaining train should not be cycled since their failure would cause a loss of total system function. For example, during power operation in some plants, there are stated minimum requirements for systems which make up the ECCS which allow certain limiting conditions for operation to exist at any one time and if the system is not restored to meet the requirements within the time period specified in a plant's Technical Specification the reactor is required to be put in some other mode. Furthermore, prior to initiating repairs all valves and interlocks in the system that provide a duplicate function are required to be tested to demonstrate operability immediately and periodically thereafter during power operation. For such plants this situation would be contrary to the NRC guideline as stated in the document mentioned above.

The San Onofre Nuclear Power Station's Technical Specifications may have requirements that are contrary to the above mentioned guidelines. We have discussed this situation with the licensee and the licensee has agreed to review the Technical Specifications and to consider the need to propose Technical Specification changes which would have the effect of precluding such testing.

If, after making this consideration, the licensee determines that the TS should not be changed because the guidelines are not applicable or if that the guidelines cannot be followed, the licensee shall submit to the NRC the reasons that led to their determination for each potentially affected valve. In the licensee submittal, the potentially affected sections of the TS, in addition to the valves, should be identified.

3.2 General Relief Requests

3.2.1 Relief Request: All Category A valves will meet Appendix J leak testing requirements in lieu of Section XI requirements.

Code Requirement: IWV-3420 Valve Leak Rate Test. Category A valves shall be leak-tested. Tests shall be conducted at the same (or greater) frequency as scheduled refueling outages, but not less than once every two years. Valve seat leakage tests shall be made with the pressure differential in the same direction as will be applied when the valve is performing its function with the following exceptions:

1. An globe type valve may be tested with pressure under seat.

2. Butterfly valves may be tested in either direction, provided their seat construction is designed for sealing against pressure on either side.

3. Gate valves with two-piece disks may be tested by pressurizing them between the seats.

4. All valves (except check valves) may be tested in either direction if the function differential pressure is 15 psi or less.

5. The use of leakage tests involving pressure differentials lower than function pressure differentials are permitted in those types of valves in which service pressure will tend to diminish the overall leakage channel opening, as by pressing the disk into or onto the seat with greater force. Gate valves, check valves, and globe type valves having function pressure differential applied over the seat, are examples of valve applications satisfying this requirement. When leakage tests are made in such cases using pressures lower than function maximum pressure differential, the observed leakage shall be adjusted to function maximum pressure differential value by calculation appropriate to the test media and the ration between test and function pressure differential assuming leakage to be directly proportional to the pressure differential to the one-half power.

6. Any valves not qualifying for reduced pressure testing as defined in 3420(c)(5) shall be leak-tested at full maximum function pressure differential, with adjustment by calculation if needed to compensate for a difference between service and test media.

Valve seat leakage may be determined by:

1. Draining the line, closing the valve, bringing one side to test pressure, and measuring leakage through a downstream telltale connection, or,

2. By measuring feed rate required to maintain pressure between two valves, or between two seats of a gate valve, provided the total apparent leak rate is charged to the valve or gate valve seat being tested, and that conditions required by IWV-3420(c) are satisfied.

The test medium shall be specified by the Owner.

Basis for Relief Request: Appendix J leak testing meets the intent of Section XI Requirements.

Evaluation: The Category A valve leak rate test requirements of IWV-3420 (a-e) have been superceded by Appendix J requirements for CIVs. The NRC staff has concluded that the applicable leak test procedures and requirements for CIVs are determined by 10 CFR 50 Appendix J. Relief from paragraph IWV-3420 (a-e) for CIVs presents no safety problem since the intent of IWV-3420 (a-e) is met by the Appendix J requirements.

Section f and g of IWV-3420 must be met by the licensee otherwise relief must be requested from these paragraphs. It should be noted that this relief request applies only where a type C Appendix J leak test is performed. Therefore, it is recommended that relief be granted from the leak test requirements of Section XI.

3.3 Chemical and Volume Control System (5687-67)

3.3.1 Code Relief - Category C Valves

3.3.1.1 Relief Request: Valves 338-2-C42 and 339-2-C42 will not be exercised according to the requirements of Section XI.

Code Requirement: Check valves shall be exercised at least once every 3 months, with the exceptions as shown in the following paragraph.

Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the check valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months. Check valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months.

Licensee Basis for Relief Request: None provided.

Evaluation: It is recommended that this relief request be denied until such time as further technical justification is provided that demonstrates the impracticality of the Code requirements.

3.4 Auxiliary Coolant System (5687-68)

3.4.1 Code Relief - Category C Valves

3.4.1.1 Relief Request: Valve 2-647 (2 of them) will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: These valves are not required to be exercised because they are always in their safety related position. The position of these valves during normal plant operations is the same as the position of the valves when performing their safety related function.

Evaluation: These two valves are passive valves. Therefore it is recommended per Item 3.1.5 that relief be granted from the stroking requirements of Section XI.

3.5 Safety-Injection System (5687-69)

3.5.1 Code Relief - Category C Valves

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3.5.1.1 Relief Request: Valves 867A-6-C58, 867B-6-C58 and 867C-6-C58 will be full stroke exercised at refueling outages in lieu of Section XI requirements.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: Full stroking these valves every 3 months during normal plant operations, or at cold shutdowns is impractical.

Evaluation: Valves 867A-6-C58, 867B-6-C58, and 867C-6-C58 of the Safety Injection Systems can neither be fully or partially stroked during normal plant operations. This is because the reactor coolant pressure cannot be overcome during normal plant operation. These valves cannot be stroked at cold shutdowns because of the danger of overpressurizing the reactor vessel. It is recommended, due to the impracticality caused by plant design, that relief be granted to full stroke exercise these valves at refueling outages in lieu of Section XI requirements.

3.5.1.2 Relief Request: Valve 881-4-C48 will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: This valve is not required to be exercised because it is always in its safety related position. The position of this valve during normal plant operations is the same as the position of the valve when performing its safety related function.

Evaluation: Valve 881-4-C48 is a passive valve. Therefore, it is recommended per Item 3.1.5 that relief be granted from the stroking requirements of Section XI.

3.5.1.3 Relief Request: Valves 863A-6-C34 and 863B-6-C34 will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: These valves are located on the discharge lines from the Safety Injection System (SIS) recirculation pumps which are located inside containment in a dry sump. Testing of these valves would require flow in the discharge lines of the pumps to verify proper operation. Since the sump is dry except when an accident occurs (thus filling the sump), it is not practical nor feasible to exercise these valves.

Evaluation: These valves of the Safety Injection System are important, and as a result, require that some testing be performed on them on a periodic basis. The review of the licensee's submittal has indicated that the licensee has not submitted sufficient

documentation to justify full relief from Code requirements. Until such time as sufficient documentation is presented, reviewed and acted upon, it is recommended that the licensee meet the requirements of the Code.

3.5.1.4 Relief Request: Valves 862A-12-C42 and 862B-12-C42 will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: None provided.

Evaluation: This relief request should be rejected until further technical justification is provided that demonstrates the impracticality of the Code requirement. Until such time, we recommend the licensee be required to comply with Section XI of the ASME B&PV Code.

3.6 Miscellaneous Water Systems

3.6.1 Code Relief - Category B Valves (5687-76)

3.6.1.1 Relief Request: Valve CV-92 will be full stroke exercised at least once every 18 months.

Code Requirement: Category B valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Valves that cannot be operated during normal plant operation shall be specifically identified by the owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns, these valves need not be exercised more often than once every 3 months.

Licensee Basis for Relief Request: Valve CV-92 is an isolation valve which, when opened, permits water from the RWST to enter the sphere fire suppression spray header.

Exercising the valve while in operation would allow water from the RWST to flow through the fire suppression spray header inside containment. This water would flow over the reactor coolant pumps, residual heat removal pumps and other vital equipment, thus placing the plant in an unsafe mode of operation.

Testing at cold shutdowns could allow water that accumulates in the piping to run out the spray nozzles, since the nozzles are at a lower elevation than portions of the spray piping. As discussed previously, this water would flow over the reactor coolant pumps, residual heat removal pumps and other vital pieces of equipment. Thus, it would be necessary to drain and disable the system to allow the valve to be exercised. It is felt that disabling the fire suppression spray system is not prudent.

The recently issued Fire Protection Technical Specifications requires that this valve, among others, be cycled at least once every 18 months. It is felt that this requirement provides adequate assurance of proper valve operability.

Evaluation: As stated in the "Licensee Basis for Relief Request," exercising this valve during normal plant operation will spray water over the reactor coolant pumps, residual heat removal pumps and other vital pieces of equipment, thus placing the plant in an unsafe mode of operation. Therefore, it is recommended per NRC guidelines to fully stroke exercise valve CV-92 of the Miscellaneous Water Systems at least once every 18 months under the Fire Protection Technical Specification in lieu of Section XI requirements.

3.7 Turbine System (5687-78)

3.7.1 Code Relief - Category B Valves

3.7.1.1 Relief Request: Valve CV-96 will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis for Relief Request: None provided.

Evaluation: This relief request should be rejected until further technical justification is provided that demonstrates the impracticality of the Code requirement. Until such time, the licensee should be required to comply with Section XI of the ASME B&PV Code.

3.8 Feedwater and Condensate System (5687-79)

3.8.1 Code Relief - Category B Valves

3.8.1.1 Relief Request: Valve CV-21 will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis for Relief Request: None provided.

Evaluation: This relief request should be rejected until further technical justification is provided that demonstrates the impracticality of the Code requirement. Until such time, the licensee should be required to comply with Section XI of the ASME B&PV Code.

3.8.2 Code Relief - Category C Valves

3.8.2.1 Relief Request: Valve 12-600-222 (2 of them) will not be exercised according to the requirements of Section XI.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis for Relief Request: These valves are not required to be exercised because they are always in their safety related position. The position of these valves during normal plant operations is the same as the position of the valves when performing their safety related function.

Evaluation: Valves 12-600-222 (2 valves) are passive valves. Therefore, it is recommended per Item 3.1.5 that relief be granted from the stroking requirements of Section XI.

4.0 COLD SHUTDOWN TESTING OF VALVES

4.1 General

4.1.1 Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valve shall be part-stroke exercised during plant operation and full-stroke exercised during cold shutdown. Valves that cannot be exercised during plant operation shall be full-stroke exercised during cold shutdowns. Full-stroke exercising during cold shutdowns for valves not full-stroke exercised during plant operation shall be on a frequency determined by the intervals between shutdowns as follows: for intervals of 3 months or longer, exercise during each shutdown; for intervals of less than 3 months, full-stroke exercise is not required unless 3 months have passed since last shutdown exercise.

The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e., "NRC Staff Guidance for Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a(g)," specifically section 5, page 7.

4.2 Chemical and Volume Control System (5687-67)

4.2.1 Category A Valves

4.2.1.1 Valves: CV-525, CV-526, CV-527 and CV-528

Code Requirement: Category A valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph. They shall be leak-tested at the same (or greater) frequency as scheduled refueling outages but not less than once every two years.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full-stroke exercised during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves CV-525, CV-526, CV-527 and CV-528 of the Chemical and Volume Control System can be neither fully or partially stroked during normal plant operations. Full stroke exercising valves CV-525 and CV-526 would inhibit control of the reactor coolant level control system during normal plant operation. To have valves CV-527 and CV-528 fail in the closed position would affect seal water flow to the reactor coolant pumps causing potential damage to them. It is recommended per NRC guidelines, therefore, that these valves be full stroke exercised at cold shutdowns.

4.2.2 Category B Valves

4.2.2.1 Valves: FCV-1115D, FCV-1115E, FCV-1115F, LCV-1112, CV-304, CV-305, PCV-1115A, PCV-1115B, PCV-1115C and CV-276.

Code Requirement: See Code Requirement Item 3.6.1.1

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves FCV-1115D, FCV-1115E, FCV-1115F, CV-276, CV-305, CV-304, PCV-1115A, PCV-1115B and PCV-1115C of the Chemical and Volume Control System (CVCS) can neither be fully or partially stroked during normal plant operations. Valves FCV-1115D, FCV-1115E, and FCV-1115F if fully or partially stroked during normal plant operations would interrupt seal water flow possibly damaging the reactor coolant pumps. Valve CV-276 can neither be fully or partially stroked because to do so would affect the operation of the reactor coolant pump seals which most likely will cause damage to the pumps. Valve CV-304 can neither be fully or partially stroked because to do so would inhibit control of the reactor coolant level control system. Valve CV-305 can neither be fully or partially stroked because either exercise could cause a thermal shock to the auxiliary spray header in the pressurizer. Valves PCV-1115A, PCV-1115B and PCV-1115C cannot be fully stroked because they would prevent seal water from reaching the reactor coolant pumps, possibly damaging them. They cannot be partially stroked because they are either open or closed only valves. Valve LCV-1112 of the CVCS is an open or closed only valve, and therefore, partial stroking is impractical. Full stroking the valve inhibits control of the reactor coolant level control system during normal plant operations. It is recommended, therefore, due to the impracticality caused by plant design, that these valves be full stroke exercised at cold shutdowns.

4.2.2.2 Valves: FCV-1112 and HCV-1117

Code Requirement: See Code Requirement Item 3.6.1.1

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operations. Partial stroking every 3 months and full stroking at cold shutdowns is practical.

BPD PPP

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Evaluation: Valves FCV-1112 and HCV-1117 of the CVCS cannot be fully stroked during normal operations. Valve FCV-1112, if fully stroked, would inhibit the charging system operations which would affect the reactor coolant level. Valve HCV-1117 cannot be fully stroked because the capability does not exist to verify its full stroke exercise during normal plant operations. Verification cannot be made because there is no remote indicator; also the valve is located inside containment. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.2.3 Category C - Check Valves

4.2.3.1 Valves: 264-2-C58, 272-2-C58, 280-2-C58, 308-2-C58, 354-2-C58, 236-4-C42, 255-1/2-C42A, 351-4-C42 and 362-2-CA4.

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis: Full stroking of the above listed valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves 264-2-C58, 272-2-C58, 280-1-C58, 308-2-C58, 354--2-C58, 236-4-C42, 255-1/2-C42A, 351-4-C42 and 362-2-CA4 of the CVCS can neither be fully or partially stroked during normal plant operations. Valves 264-2-C58, 272-2-C58 and 280-2-C58 cannot be fully or partially stroked because they would inhibit seal water from reaching the reactor coolant pumps, and thus possibly damaging them. Valve 308-2-C58 would inhibit reactor coolant level control. Valve 354-2-C58 cannot be fully or partially stroke exercised because either exercise would cause a thermal shock to the auxiliary spray header in the pressurizer. Valve 236-4-C42 cannot be fully or partially stroked because to do so would affect the operation of the charging pumps. Valve 255-1/2-C42A when being tested in line requires that both charging pumps be stopped. Therefore, full or partial stroking cannot be performed during power operation. Since this action would perturb reactor coolant pump seal water flow and could damage the seals as a result. Valve 351-4-C42 cannot be fully or partially stroked because it requires the opening of other valves that would allow highly borated water into the reactor vessel. Valve 362-2-CA4 while being tested during normal plant operation requires isolation of the seal water return line and the stopping of both charging pumps. This unusual operating position has the potential for perturbing seal water flow and damaging the reactor coolant pump seals. Therefore, as a result, it is impractical for this valve to be fully or partially stroked during normal operations. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.3 Auxiliary Coolant System (ACS)(5687-68)

4.3.1 Category B Valves

4.3.1.1 Valves: MOV-813, MOV-814, MOV-833, MOV-834, CV-722A, CV-722B, CV-722C, CV-737A anc CV-737B.

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code is impractical during normal plant operation.

Evaluation: Valves MOV-813, MOV-814, MOV-833 and MOV-834 of the Auxiliary Coolant System cannot be fully or partially stroked because they form a pressure boundary between the reactor coolant system pressure and the Residual Heat Removal System (RHR System). Opening any of these valves could subject the RHR System to pressure above its design during normal plant operations. Valves CV-722A, CV-722B and CV-722C of the Auxiliary Coolant System (ACS) are open or closed only valves, therefore, partial stroking is impractical. Full stroking these valves is also impractical because doing so will cause a loss of cooling water to the thermal barrier wall of the reactor coolant pumps. Valves CV-737A and CV-737B of the ACS are also open or closed only valves therefore partial stroking is considered impractical. Full stroking these valves would affect the operation of normal component cooling water to safety related components. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.3.1.2 Valve: HCV-602

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking this valve every 3 months as required by the Code is impractical during normal plant operations. Partial stroking every 3 months and full-stroking at cold shutdowns is practical.

Evaluation: Valve HCV-602 of the Auxiliary Coolant System cannot be fully stroked because the capability does not exist to verify its full stroke exercise during normal plant operations. Verification cannot be made because there is no remote indicator, also the valve is located inside containment. It is recommended, therefore, due to the impracticality caused by plant design, that this valve be full stroke exercised at cold shutdown.

4.3.2 Category C - Check Valves

4.3.2.1 Valves: 819A-6-C54, 819B-6-C54, 729A-3-C32, 729B-3-C32, 729C-3-C32, 741A-1-1/2-C38, 742A-1-1/2-C38, and 743A-1-1/2-C38.

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Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves 819A-6-C54, 819B-6-C54, 729A-3-C32, 729B-3-C32, 729C-3-C32, 741A-1-1/2-C38, 742A-1-1/2-C38, 743A-1-1/2-C38 of the ACS, can neither be fully or partially stroked during normal plant operations. Valves 819A-6-C54 and 819B-6-C54 when stroked, requires the RHR pump to run. These pumps are run only at cold shutdowns because there is no make up water to the system during normal operation. Valves 729A-3-C32, 729B-3-C32, and 729C-3-C32 when tested would require interruptions of cooling water to the reactor coolant pumps which could result in damage to the pumps. Valves 741A-1-1/2-C38, 742A-1-1/2-C38, and 743A-1-1/2-C38 also when tested would require interruptions of cooling water to the reactor coolant pumps which could result in damage to the pumps. It is recommended, therefore, due to the impracticality caused by plant design, that these valves be full stroke exercised at cold shutdowns.

4.4 Safety-Injection System (5687-69)

4.4.1 Category B Valves

4.4.1.1 Valves: MOV-356, MOV-357, MOV-358, MOV-850A, MOV-850B, MOV-850C, MOV-LCV-1100B, MOV-LCV-1100D, MOV-866A, MOV-866B, MOV-883, HV-851A, HV-851B, HV-853A, and HV-853B.

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves MOV-356, MOV-357 and MOV-358 of the Safety Injection System are open or closed only valves, making partial stroking impractical. Full stroking these valves during normal plant operations would interrupt seal water flow, increasing the risk of damaging the reactor coolant pumps. Valves MOV-850A, MOV-850B, MOV-850C, MOV-LCV-1100B, MOV-LCV-1100D, MOV-883, HV-851A, HV-851B, HV-853A and HV-853B can neither be fully or partially stroked during normal plant operations. Valves MOV-850A, MOV-850B and MOV-850C cannot be fully or partially stroked because during normal plant operations, these valves perform a pressure isolation function. Valves MOV-LCV-1100B and MOV-LCV-1100D cannot be fully or partially stroked because they would inhibit the reactor coolant level control. Also, negative reactivity would be introduced into the vessel. Valve MOV-883's safety function is to be open and is open, therefore, during normal plant operations. Failure of this valve in the closed position would put the plant in an unsafe

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condition. Valves HV-851A, HV-851B, HV-853A and HV-853B cannot be fully or partially stroked because they would cause a dilution of boron concentration in the refueling water tank. Valves MOV-866A and MOV-866B of the Safety Injection System can neither be fully or partially stroked because the opening of either of these valves could possibly partially drain the line. It could partially drain the line because there is no assurance that check valves 863A-6-C34 and 863B-6-C34 will hold. When the pump is operated a water hammer could result with damage to the piping. Failure of this piping could cause drainage of the refueling water storage tank. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.5 Steam System (5687-73)

4.5.1 Category B Valves

4.5.1.1 Valves: MOV-14, MOV-15, MOV-16, MOV-17, CV-3, CV-4, CV-76, CV-77, CV-78, CV-79, CV-124, CV-125, CV-126, CV-127, CV-128, CV-129, CV-130 and CV-131

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves MOV-14, MOV-15, MOV-16 and MOV-17 of the Steam System cannot be partially stroked because they are either open or closed only valves. Full stroking these valves would affect plant operations by increasing the moisture content of the steam entering the low pressure turbines from the reheaters. Valves CV-124, CV-125, CV-126, CV-127, CV-128, CV-129, CV-130 and CV-131 of the Steam System are open or closed only valves, therefore partial stroking is impractical. Full stroking these valves during normal plant operation would disrupt steam flow to the steam reheater creating operational problems. Valves CV-3, CV-4, CV-76, CV-77, CV-78 and CV-79 can neither be fully or partially stroked during normal plant operation. Valves CV-3 and CV-4 cannot be fully or partially stroked because they would affect plant operations adversely by changing steam flow. Valves CV-76, CV-77, CV-78 and CV-79 cannot be fully or partially stroked because these valves are pressure relief valves. Operating them during plant operations would have a detrimental effect. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.5.1.2 Valve: CV-145

Code Requirement: See Code Requirement Item 3.6.1.1.

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Licensee Basis: Full stroking this valve every 3 months as required by the Code, is impractical during normal plant operations. Partial stroking every 3 months and full stroking at cold shutdowns is practical.

Evaluation: Valve CV-145 of the Steam System cannot be fully stroked during normal plant operations because to do so will affect the condenser operations, thus adversely affecting the plant operations. It is recommended, therefore, due to the impracticality caused by plant design, that this valve be full stroke exercised at cold shutdowns.

4.6 Miscellaneous Water Systems (5687-76)

4.6.1 Category B Valves

4.6.1.1 Valves: CV-82 and CV-114

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves CV-82 and CV-114 of the Miscellaneous Water Systems can neither be fully or partially stroked during normal plant operations. To do so would (a) spray down inside containment and (b) if they fail open, would drain the refueling water storage tank. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.7 Feedwater and Condensate System (5687-79)

4.7.1 Category B Valves

4.7.1.1 Valves: CV-36, CV-37, CV-875A, CV-875B, HV-852A, HV-852B, HV-854A and HV-854B

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves CV-36, CV-37, CV-875A and CV-875B of the Feedwater and Condensate System can neither be fully or partially stroked during normal plant operations. Valves CV-36 and CV-37 cannot be fully or partially stroked because if they fail open, the water from the refueling water storage tank would most like' be diverted to the condenser instead of the reactor coolant system during an accident. Valves CV-875A and CV-875B cannot be fully or partially stroked because to do so would put non-borated water into the refueling water storage tank, lowering its boron concentration.

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Valves HV-852A, HV-852 B, HV-854A and HV-854B of the Feedwater System are open or closed only valves, therefore, partial stroking would be impractical. Full stroking these valves during normal plant operations would cause a loss of feedwater to the steam generators which most likely will cause damage to the unit and tripping the plant off the line. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.7.1.2 Valves: FCV-456, FCV-457, FCV-458, CV-142, CV-143 and CV-144.

Code Requirement: See Code Requirement Item 3.6.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operations. Partial stroking every 3 months and full stroking at cold shutdowns is practical.

Evaluation: Valves FCV-456, FCV-457, FCV-458, CV-142, CV-143 and CV-144 of the Feedwater and Condensate System cannot be fully stroked during normal plant operations. Valves FCV-456, FCV-457 and FCV-458 cannot be fully stroked because to do so would inhibit feedwater to the steam generator, disrupting plant operations. Valves CV-142, CV-143 and CV-144 cannot be fully stroked because full stroking these valves during plant operations below 100 MW_e would flood the steam generators. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdowns.

4.7.2 Category C - Check Valves

4.7.2.1 Valves: 10-600-222 (three of them) and 4-600-220

Code Requirement: See Code Requirement Item 3.3.1.1.

Licensee Basis: Full stroking these valves every 3 months as required by the Code, is impractical during normal plant operation.

Evaluation: Valves 10-600-222 (three of them) and 4-600-220 of the Feedwater and Condensate System can neither be fully or partially stroked during normal plant operations. Valves 10-600-222 (three) cannot be fully or partially stroked because closing them would stop feedwater flow to the steam generators. Valve 4-600-220 cannot be fully or partially stroked because it would cause thermal shock to the feedwater piping. It is recommended, therefore, due to the impracticality caused by plant design and per NRC guidelines, that these valves be full stroke exercised at cold shutdown.

5.0 PROGRAM BREAKDOWN

5.1 Reactor Coolant System (5687-66)

5.1.1 The following are valves in the IST program which the licensee intends to test to the applicable Code requirement.

Valve	Category
RV-532	C
RV-533	C

5.1.2 The following are valves that were listed in the IST submittal and were deleted from the IST program as being non-safety related (safety related as defined by "NRC Staff Guidance for Preparing Pump/Valve Testing...," dated January 13, 1978).

Valve	Category	Valve	Category
PCV-430C	B	CV-545	B
PCV-430H	B	CV-531	B
CV-530	B	522-3/4-X58N	B
CV-546	B	523-3/4-X58N	B

5.2 Chemical and Volume Control System (5687-67)

5.2.1 The following are valves in the IST program which the licensee intends to test to the applicable Code requirement.

Valve	Category	Valve	Category
MOV-18	B	CV-287	B
MOV-19	B	CV-334	B
HCV-427A	B	CV-410	B
HCV-427B	B	RV-289	C
HCV-427C	B	247-3-C58	C
RV-2004	C	248-3-C58	C
CV-288	B		

5.2.2 The following are valves that were listed in the IST submittal and were deleted from the IST program as being non-safety related (safety related as defined by "NRC Staff Guidance for Preparing Pump/Valve Testing...," dated January 13, 1978).

Valve	Category	Valve	Category
FCV-1115A	B	CV-204	B
FCV-1115B	B	CV-291	B
FCV-1115C	B	CV-412	B
CV-202	B	CV-413	B
CV-203	B	337-2-C42	C

5.2.3 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category	Valve	Category
CV-525	A	CV-276	B
CV-526	A	FVC-1112	B
CV-527	A	HCV-1117	B
CV-528	A	264-2-C58	C
FCV-1115D	B	272-2-C58	C
FCV-1115E	B	280-2-C58	C
FCV-1115F	B	308-2-C58	C
LCV-1112	B	354-2-C58	C
CV-304	B	236-4-C42	C
CV-305	B	255-1/2-C42A	C
PCV-1115A	B	351-4-CA2	C
PCV-1115B	B	362-2-CA4	C
PCV-1115C	B		

5.2.4 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category
338-2-C42	C
339-2-C42	C

5.3 Auxiliary Coolant System (5687-68)

5.3.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
MOV-822A	B	RV-775A	C
MOV-822B	B	RV-775B	C
RV-206	C	RV-775C	C
816A-6-G54	E	RV-775D	C
816B-6-G54	E	RV-775E	C
820A-6-G54	E	RV-775F	C
820B-6-G54	E	RV-775G	C
861A-16-G42	E	RV-775H	C
861B-16-G42	E	RV-775I	C
MOV-720A	B	RV-787	C
MOV-720B	B	703A-8-C32	C
TCV-601A	B	703B-8-C32	C
TCV-601B	B	703C-8-C32	C
RV-721A	C	783-4-G32	E
RV-721B	C	844-1-1/2-T32	E
RV-721C			

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5.3.2 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category	Valve	Category
MOV-813	B	HCV-602	B
MOV-814	B	819A-6-C54	C
MOV-833	B	819B-6-C54	C
MOV-834	B	729A-3-C32	C
CV-722A	B	729B-3-C32	C
CV-722B	B	729C-3-C32	C
CV-722C	B	741A-1-1/2-C38	C
CV-722B	B	742A-1-1/2-C38	C
CV-737A	B	743A-1-1/2-C38	C
CV-737B	B		

5.3.3 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category
2-647 (2 valves)	C

5.4 Safety Injection System (5687-69)

5.4.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category
RV-868	C
RV-882	C

5.4.2 The following are valves that were listed in the IST submittal and were deleted from the IST program as being non-safety related (safety related as defined by "NRC Staff Guidance For Preparing Pump/Valve Testing...," dated January 13, 1978).

Valve	Category
MOV-880	B

5.4.3 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category	Valve	Category
MOV-356	B	MOV-866A	B
MOV-357	B	MOV-866B	B
MOV-358	B	MOV-883	B
MOV-850A	B	HV-851A	B
MOV-850B	B	HV-851B	B
MOV-850C	B	HV-853A	B
MOV-LCV-1100B	B	HV-853B	B
MOV-LCV-1100D	B		

5.4.4 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category	Valve	Category
867A-6-C58	C	863A-6-C34	C
867B-6-C58	C	863B-6-C34	C
867C-6-C58	C	862A-12-C42	C
881-4-C48	C	862B-12-C42	C

5.5 Reactor Cycle Sampling System (5687-70)

5.5.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
CV-951	A	CV-956	A
CV-953	A	CV-962	A
CV-955	A	*964-3/8-X58T	B

5.5.2 The following are valves in the IST submittal that will be re-categorized in the resubmittal as a result of the SER meeting.

Valve	From Category	To Category
964-3/8-X58T	B	C

5.6 Steam System (5687-73)

5.6.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
CV-74	B	RV-6	C
RV-1	C	RV-7	C
RV-2	C	RV-8	C
RV-3	C	RV-9	C
RV-4	C	RV-10	C
RV-5			

*Valve Recategorized.

5.6.2 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category	Valve	Category
MOV-14	B	CV-124	B
MOV-15	B	CV-125	B
MOV-16	B	CV-126	B
MOV-17	B	CV-127	B
CV-3	B	CV-128	B
CV-4	B	CV-129	B
CV-76	B	CV-130	B
CV-77	B	CV-131	B
CV-78	B	CV-145	B
CV-79	B		

5.7 Circulating Water System (5687-75)

5.7.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category
POV-5	B
POV-6	B
POV-11	B

5.8 Miscellaneous Water Systems (5687-76)

5.8.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
CV-517	B	600-300-241 (2 valves)	C
CV-518	B		

5.8.2 The following are valves that were listed in the IST submittal and were deleted from the IST program as being non-safety related (safety related as defined by "NRC Staff Guidance For Preparing Pump/Valve Testing...," dated January 13, 1978).

Valve	Category
8-150-276	C
CV-28	B

5.8.3 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category
CV-82	B
CV-114	B

5.8.4 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category
CV-92	B

5.9 Chemical Feed System (5687-77)

5.9.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
SV-600	B	RV-2003A	C
SV-601	B	RV-2003B	C
RV-2000	C	3/4-600-237 (2 valves)	C
RV-2001	C	RV-2002	C

5.10 Turbine System (5687-78)

5.10.1 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category
CV-96	B

5.11 Feedwater and Condensate System (5687-79)

5.11.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category
3-600-222 (2 valves)	C

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5.11.2 The following are valves that were listed in the IST submittal and were deleted from the ISt program as being non-safety related (safety related as defined by "NRC Staff Guidance For Preparing Pump/Valve Testing...," dated January 13, 1978).

Valve	Category	Valve	Category
4-600-222 (3 valves)	C	MOV-22	B
2-600-229 (3 valves)	C	CV-19	B
MOV-20	C	CV-20	B
MOV-21	B	1-600-229 (4 valves)	C

5.11.3 The following are valves in the IST submittal that cannot be full stroke exercised every 3 months but will meet the requirements of Section XI. Additional information is required by the NRC to verify the impracticality of full stroke exercising every 3 months.

Valve	Category	Valve	Category
CV-36	B	FCV-457	B
CV-37	B	FCV-458	B
CV-875A	B	CV-142	B
CV-875B	B	CV-143	B
HV-852A	B	CV-144	B
HV-852B	B	4-600-220	C
HV-854A	B	10-600-222 (3 valves)	C
HV-854B	B	FCV-456	B

5.11.4 The following are valves in the IST submittal that cannot meet the requirements of Section XI and relief has been requested.

Valve	Category
12-600-222 (2 valves)	C
CV-21	B

6.0 MISCELLANEOUS COMMENTS

6.1 Augmented Inspections of Valves - It is recommended that the Nuclear Regulatory Commission (NRC) take a position of requiring augmented inspections for valves that are currently designated as Category E in this IST program, and are proven to be of safety significance.

The Code, to date, has not addressed the generic function of these valves during an accident situation. It is most essential that these safety related valves be in the correct position during an accident situation. Safety related is defined by "NRC Staff Guidance For Preparing Pump and Valve Testing..." dated January 13, 1978. This definition states "safety related are those pumps and valves necessary to safely shutdown the plant or mitigate the consequences of an accident." Should these valves be in the incorrect position a safe shutdown may not be possible. The Code chooses to ignore this type of valve with statements of the form: "IWV-1300 Exclusions. Valves that are not covered by this Subsection include valves used for operating convenience only such as manual vent, drain, instrument and test valves and valves used for maintenance only."

It is inconsistent to be concerned solely with the operability of some valves (Category A, B, C, and D) when others (Category E valves incorrectly positioned) will nullify the operation of the pumps and Category A, B, C, and D valves. In light of recent events this inconsistency should be addressed and resolved.

The concept of "augmented inspection" is to have periodic visual inspections, with written records, of the position of the valve. This concept might be a method of standardizing the procedures relating to passive valves (Category E, and non-Category E type), position verification. Valves that the NRC should be concerned with are Category E, and non-Category E type valves, such as on the accumulator discharge outlets, valves on either side of safety related pumps, and valves in the ECCS injection path or recirculation path (RWST to RCS, pump to RCS, Emergency Feedwater flow path).

This concept of augmented inspections is not original, the NRC stated it could be used in its November 17, 1976 letter to the Power Authority of the State of New York. This was a generic letter that went to all operating plants. The topic of the letter was NRC Staff Guidance for Complying with 10 CFR 50.55a(g) - Inservice Inspection Requirements.

Conclusion

The Inservice Inspection and Testing Program submitted by the Southern California Edison Company for the San Onofre Nuclear Generating Station, and modified by this evaluation report is in general compliance with the requirements of Section XI of the 1974 Edition and Addenda through the Summer of 1975 of the ASME Boiler and Pressure Vessel Code as required by 10 CFR 50.55 a(g), and NRC Staff guidance letters and briefings. Those items not found to be in compliance with the above, will be addressed in the licensee's response to the SER meeting and evaluated further.

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