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TECHNICAL EVALUATION REPORT
PUMP AND VALVE INSERVICE TESTING PROGRAM
CLINTON POWER STATION, UNIT 1

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ABSTRACT

This EG&G Idaho, Inc., report presents the results of our evaluation of the Clinton Power Station, Unit 1, Inservice Testing Program for pumps and valves whose function is safety-related.

PREFACE

This report is supplied as part of the "Review of Pump and Valve Inservice Testing Programs for Operating Reactors (III)" program being conducted for the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Mechanical Engineering Branch, by EG&G Idaho, Inc., Regulatory and Technical Assistance Unit.

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1. INTRODUCTION

Contained herein is a technical evaluation of the pump and valve inservice testing (IST) program submitted by Illinois Power Company for the Clinton Power Station, Unit 1.

A working session with Illinois Power Company representatives was conducted on December 9 and 10, 1986. The licensee's IST program Revision 5, dated May 27, 1988, as amended by the licensee's letters dated August 10, 1988, December 13, 1988, October 3, 1989, and September 27, 1990, was reviewed to verify compliance of proposed tests of pumps and valves whose function is safety related with the requirements of the ASME Boiler and Pressure Vessel Code (the Code), Section XI, 1980 edition through winter 1981 addenda. Any IST program revisions subsequent to those noted above are not addressed in this technical evaluation report (TER). Program changes involving additional or revised relief requests should be submitted to the NRC under separate cover in order to receive prompt attention, but should not be implemented prior to review and approval by the NRC. Other IST program revisions should follow the guidance in Section D of Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs."

In its IST program, the Illinois Power Company has requested relief from the ASME Code testing requirements for specific pumps and valves and these requests have been evaluated individually to determine if the criteria in 10 CFR 50.55a for granting relief are indeed met for the specified pumps or valves. This review was performed utilizing the acceptance criteria of the Standard Review Plan, Section 3.9.6, and the Draft Regulatory Guide and Value/Impact Statement titled "Identification of Valves for Inclusion in Inservice Testing Programs," and Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs." IST program testing requirements apply only to component testing (i.e., pumps and valves) and

are not intended to provide the basis to change the licensee's current Technical Specifications for system test requirements.

Section 2 of this report presents the Illinois Power Company bases for requesting relief from the Section XI requirements for the Clinton Power Station, Unit 1, pump testing program and the reviewer's evaluations and conclusions regarding these requests. Similar information is presented in Section 3 for the valve testing program.

Inconsistencies and omissions in the licensee's IST program noted during the course of this review are listed in Appendix A. The licensee should resolve these items in accordance with the evaluations, conclusions, and guidelines presented in this report.

A listing of the P&ID's used for this review is contained in Appendix B.

Justifications for exercising Category A, B, and C valves during cold shutdowns and refueling outages instead of quarterly during power operations were reviewed and found acceptable except as noted in Appendix A.

2. PUMP TESTING PROGRAM

The Clinton Power Station, Unit 1, IST program submitted by Illinois Power Company was examined to verify that all pumps that are included in the IST program are subjected to the periodic tests required by the ASME Code, Section XI, except where specific relief from testing has been requested as identified below. Each Illinois Power Company basis for requesting relief from the pump testing requirements and the reviewer's evaluation of that request are summarized below.

2.1 All Pumps in the IST Program

2.1.1 Pump Bearing Temperature Measurements

2.1.1.1 Relief Request. The licensee has requested relief from the bearing temperature measurement requirements of Section XI, Paragraph IWP-3100, for all pumps listed in their IST program and proposed to measure the required pump hydraulic parameters and vibration to determine pump operability and mechanical degradation.

2.1.1.1.1 Licensee's Basis for Requesting Relief--The measurement of the pump bearing temperatures annually does not increase any confidence in the reliability of the pumps because bearing temperature rises just minutes prior to failure of the pump bearing. In order to measure this parameter, bearing temperature is required to be stabilized per IWP-3500(b), which requires the pump to be running at least an hour. Since this bearing temperature measurement does not increase any confidence in the pump reliability and will reduce the pump life due to the time required to run the pump, this measurement does not provide meaningful data. Therefore, measurement of the pump bearing temperatures annually as required by the Code will not be performed.

2.1.1.1.2 Evaluation--IWP-3300 requires that pump bearing temperature measurements be taken during at least one inservice test each year and IWP-3500(b) requires that a pump be run until bearing temperatures stabilize (three successive readings taken at 10 minute intervals cannot vary

by more than 3%). Industry experience has shown that a yearly measurement of pump bearing temperature provides limited information for detecting bearing degradation. Factors such as working fluid temperature and ambient temperature affect the measured bearing temperature and could mask any bearing condition change short of a catastrophic failure. In addition, it is difficult to obtain representative bearing temperature measurements for these pumps because they do not have temperature sensors installed in the bearings.

To obtain pump bearing temperature measurements it is necessary to start standby pumps and operate them for at least 1/2 hour. Some of these pumps can only be tested in a minimum flow recirculation loop and operation at the low flow conditions achievable in these flow paths could result in rapid wear and possible pump damage. It is a hardship for the licensee to take these measurements and cause wear and possible damage to safety related pumps. Because of the limited ability to detect bearing degradation, yearly bearing temperature measurements would not provide a compensating increase in the level of quality and safety. The licensee's proposal to measure pump hydraulic parameters and vibration quarterly should provide an adequate indication of pump bearing condition and monitor bearing degradation.

Based on the determination that requiring the licensee to comply with the Code requirements would be a hardship without a compensating increase in the level of quality and safety, and considering that the proposed testing should provide reasonable assurance of pump operational readiness, relief may be granted from the Code requirements as requested.

2.1.2 Allowable Ranges for Flow Rate and Differential Pressure

2.1.2.1 Relief Request. The licensee has requested relief from the allowable range requirements of Section XI, Paragraph IWP-3210 and Table IWP-3100-2, for pump flow rates and differential pressures, for all pumps in the IST program and proposed to use allowable ranges that are less restrictive on the upper limits for these pump test parameters.

2.1.2.1.1 Licensee's Basis for Requesting Relief--The allowable ranges provided in the Code are unrealistic since Subsection IWP-4110 allows

the flow rate and differential pressure instrumentation a tolerance of ±2% accuracy. With ±2% instrument accuracy, a small increase in flow rate or differential pressure may result in reaching the alert range or action range when the pump is operating within design parameters. The present ranges could result in the pumps being unnecessarily declared inoperable.

Illinois Power Company will utilize the following allowable range high values for flow rate (Q) and differential pressure (dP):

Parameter	Acceptable Range	Alert Range High	Action High
dP	0.93 to 1.05 dP_r	1.05 to 1.10 dP_r	>1.10 dP_r
Q	0.94 to 1.05 Q_r	1.05 to 1.10 Q_r	>1.10 Q_r

2.1.2.1.2 Evaluation- Section XI, Table IWP-3100-2, establishes the allowable ranges of test quantities for safety-related pumps. Relief may be obtained from compliance with these Code requirements for specific pumps when it is adequately demonstrated that one of the criteria provided in the Code of Federal Regulation for the granting of relief is applicable. The criteria are that it is impractical to meet the requirements and the alternate testing provides reasonable assurance of operational readiness, that compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety and the alternate testing provides reasonable assurance of operational readiness, or that the proposed testing provides equivalent protection as would be afforded by the Code. This general relief request has not adequately demonstrated that any of the criteria for granting relief are applicable, therefore, relief should not be granted. The licensee should comply with the Code allowable range requirements except in those specific cases where it is shown that doing so would be impractical or constitute a hardship without providing a compensating increase in the level of quality and safety. For these cases the licensee should submit specific relief requests and base their less restrictive limits on empirical data.

It is not anticipated that pump hydraulic performance should improve as a pump is operated and subjected to wear, therefore, increases in hydraulic parameters may not be indicative of pump degradation. However, increases in

hydraulic parameters are important since they could indicate problems with test instrumentation or other system equipment. These problems should be evaluated and corrected since they introduce uncertainties that cause pump testing to be questionable. These uncertainties in test measurements could result in significant pump degradation going undetected and uncorrected.

Based on the above concerns, general relief should not be granted from the Code requirements as requested. The licensee should comply with the Code allowable ranges for all pumps except where specific relief has been requested and granted.

2.2 Standby Liquid Control Pumps

2.2.1 Pump Flow Rate Measurements

2.2.1.1 Relief Request. The licensee has requested relief from the pump flow rate measurement requirement of Section XI, Paragraph IWP-3100, for the standby liquid control pumps, and proposed to calculate the pump flow rate by dividing the change in level of the standby liquid control test tank by the time the standby liquid control pump is in operation.

2.2.1.1.1 Licensee's Basis for Requesting Relief--The standby liquid control pumps are tested by pumping demineralized water into a test tank. There are no flow rate measuring instruments installed in this test flow path. The flow rate of the pumps will be calculated by dividing the change in level of the standby liquid control test tank by the time the standby liquid control pump is in operation.

2.2.1.1.2 Evaluation--IWP-3100 requires the quarterly measurement of pump test quantities including pump flow rate. It is not practical for the licensee to run the standby liquid control pumps in their normal flow path quarterly during power operations because this would require firing an explosive valve and establishing flow into the RCS. During power operations, the only flow path available to test these pumps is into a test tank and there are no flow instruments installed in these flow paths to allow direct measurement of pump flow rates.

The licensee has proposed to calculate pump flow rate by measuring the change in the volume of water in the test tank and dividing that by the measured time that the pump was in operation. Although the licensee is not directly measuring the flow rates for the standby liquid control pumps, their proposed testing will provide a calculated pump flow rate that can be used to evaluate pump condition and detect pump hydraulic degradation. This proposed testing should give reasonable assurance of pump operational readiness and provide an acceptable alternative to the Code required testing. System modifications would be necessary to allow the direct measurement of pump flow rates and requiring the licensee to perform these modifications would be burdensome due to the costs involved. Also, installing instrumentation would not produce a significant increase in the ability to determine pump hydraulic condition and detect degradation.

Based on the impracticality of directly measuring pump flow rates, the burden on the licensee if these Code requirements were imposed, and the licensee's proposal to calculate pump flow rates by measuring the change in test tank volume and the pumping time, relief may be granted from the Section XI requirements as requested.

2.2.2 Pump Run Times During Testing

2.2.2.1 Relief Request. The licensee has requested relief from the requirement of Section XI, Paragraph IWP-3500(a), of running the standby liquid control pumps for five minutes during testing prior to measuring the Code specified parameters and proposed to run the pumps for at least one minute during testing.

2.2.2.1.1 Licensee's Basis for Requesting Relief--The standby liquid control pumps are tested by pumping demineralized water into a test tank. The capacity of the test tank does not permit running these pumps for five minutes. Since these pumps are positive displacement type pumps and the inlet water is at a constant temperature, the flow conditions will be stabilized within a few seconds of starting the pumps. Letting the pumps run one minute before measuring/observing the required parameters will ensure the flow conditions are stabilized

2.2.2.1.2 Evaluation--IWP-3500(a) requires that pumps be run at least 5 minutes under stable conditions prior to making the required measurement or observation of each test quantity. It is impractical for the licensee to run the standby liquid control pumps in their normal flow path quarterly during power operations because this would require firing an explosive valve and establishing flow into the RCS. The only flow path that can practically be used to test these pumps during power operations is into a test tank. The test tank has insufficient capacity to allow operation of the pumps for the required five minutes. Operating the pumps for five minutes using the test flow path could result in overfilling the test tank unless system modifications were made to install a larger capacity test tank. Installation of a larger test tank would be burdensome to the licensee due to the costs involved.

The standby liquid control pumps are positive displacement pumps that have operating characteristics that would produce stable test conditions immediately after start. There should be no appreciable change in the test parameters as these pumps warm up. The licensee's proposal of running the standby liquid control pumps for at least one minute should provide test conditions sufficiently stable to produce representative test data for these positive displacement pumps. The proposed testing should provide an acceptable level of quality and safety and serve as a reasonable alternative to the Code requirements.

Based on the impracticality of running these pumps for five minutes during testing, the burden on the licensee if these Code requirements were imposed, and the licensee's proposal to measure the pump parameters after running the pumps for at least one minute, relief may be granted from the Section XI requirements as requested.

2.3 Diesel Oil Transfer Pumps

2.3.1 Pump Flow Rate Measurements

2.3.1.1 Relief Request. The licensee has requested relief from the flow rate measurement requirements of Section XI, Paragraph IWP-3100, for the

diesel fuel oil transfer pumps and proposed to calculate the pump flow rate by measuring the change in the volume of fuel oil in the day tank and dividing that by the measured time that the pump was in operation.

2.3.1.1.1 Licensee's Basis for Requesting Relief--These pumps do not have a flow rate instrument installed. A calculation is used to determine an approximate flow rate. As this calculation involves utilizing % full gauges and conversion charts, the data has been relatively inconsistent.

As the existing piping systems do not have a flow rate instrument, the new acceptance ranges below were chosen based on the design requirements of the diesel generator systems. The engines are supplied with skid mounted pumps which supply fuel oil at a rate of 4 gpm per engine. The engines burn less than 3 gpm per engine with the excess routed back to the day tank. Pumps 1D001PA and 1D001PB supply two engines each and therefore 8 gpm was determined to be the limiting flow rate. Pump 1D001PC supplies one engine and therefore 4 gpm would be the limiting flow rate for this system.

Illinois Power Company will calculate the flow rate (Q) of the Diesel Fuel Oil Transfer Pumps by dividing the change in level of the diesel fuel day tank by the time the Diesel Fuel Oil Transfer Pump is in operation. The following criteria will be utilized in lieu of the Code.

Pump	Acceptance Criteria	Alert Range	Action Range
1D001PA,PB	≥ 13 GPM	≥ 10 GPM to <13 GPM	< 10 GPM
1D001PC	≥ 13 GPM	≥ 5 GPM to <13 GPM	< 5 GPM

2.3.1.1.2 Evaluation--IWP-3100 requires the quarterly measurement of pump test quantities including pump flow rate. There are no installed instruments on the diesel fuel oil transfer system that allow a direct measurement of the flow rate when testing these pumps quarterly. In lieu of installing flow instrumentation, the licensee proposed that the pump flow rate be calculated by measuring the change in day tank level or volume and the pump operation time that was required to make that change. This method does yield a value for pump flow rate that can be used to evaluate pump hydraulic condition against the proposed allowable ranges. However, the

licensee has not provided sufficient information to demonstrate that by using the proposed test method and acceptance criteria, pump degradation will be detected prior to the pump being unable to perform its safety function.

Additional information is necessary to justify the acceptability of the proposed test method and acceptance criteria. The licensee has proposed less restrictive flow rate ranges which are based on the system performance criteria of supplying sufficient fuel to the emergency diesel generators. Section XI testing is conducted to detect degraded components and repair them prior to their failure to perform their safety function. The licensee's proposed allowable ranges are not an acceptable alternative to the Code requirements because substantial pump degradation could occur prior to corrective action being required. The allowable ranges should be based on deviation from reference values as per Table IWP-3100-2 of the Code instead of using minimum values based on system performance. Deviation from a reference value indicates a change in the pump condition that is indicative of degradation.

Since the licensee's proposed acceptance criteria does not provide a reasonable alternative to the Code requirements, relief should not be granted as requested.

If pump flow rates can be calculated with adequate accuracy and repeatability to allow the licensee to use the calculated flow rates in conjunction with the pump differential pressure measurements to monitor pump hydraulic condition and degradation, then the licensee may use this method of testing. However, if the accuracy and repeatability of the calculated flow rates are not adequate to allow a meaningful evaluation of pump hydraulic condition, then the licensee should install instrumentation that meets the requirements of IWP-4110 and 4120. If pump flow rates are calculated, the licensee should evaluate them against the Code specified allowable ranges of Table IWP-3100-2.

Based on the impracticality of directly measuring pump flow rate, the burden to the licensee of making system modifications to install instrumentation, and considering the licensee's proposal to determine flow

rate by measuring a change in day tank level over time, relief may be granted from the Code test method requirement provided the calculated flow rates provide an accuracy equivalent to that which would result from using an instrument meeting IWP-4110 and IWP-4120.

3. VALVE TESTING PROGRAM

The Clinton Power Station, Unit 1, IST program submitted by Illinois Power Company was examined to verify that all valves included in the program are subjected to the periodic tests required by the ASME Code, Section XI, and the NRC positions and guidelines. The reviewer found that, except as noted in Appendix C or where specific relief from testing has been requested, these valves are tested to the Code requirements and established NRC positions. Each Illinois Power Company basis for requesting relief from the valve testing requirements and the reviewer's evaluation of that request are summarized below and grouped according to system and valve category.

3.1 General Relief Requests

3.1.1 Stroke Time Measurements for Rapid Acting Valves

3.1.1.1 Relief Request. The licensee has requested relief from the stroke time trending and corrective action requirements of Section XI, Paragraph IWV-3417(a), for valves that normally stroke in 2 seconds or less, and proposed to assign a limiting value of full-stroke time of 2 seconds to these valves and perform corrective actions when the 2 second limit is exceeded.

3.1.1.1.1 Licensee's Basis for Requesting Relief--As these valves stroke rapidly, measurement of the stroke time of these valves to the nearest second per IWV-3413(b) means that a very small increase in stroke time would result in an extremely large percentage of change. The verification that these valves meet a specified maximum stroke time of a relatively short duration provides adequate assurance of operability of these valves. Illinois Power Company will assign a maximum stroke time of two (2) seconds for these valves. If this limiting stroke time is exceeded, the valve will be declared inoperable and corrective action will be taken.

3.1.1.1.2 Evaluation--IWV-3413(b) requires that the stroke time of power operated valves be measured to the nearest second for valves with stroke times of 10 seconds or less. IWV-3417(a) requires that the measured

stroke times be compared to the previous stroke times and corrective actions be taken if a measured stroke time increases by 50% or more from one test to the ne (for valves with full-stroke times less than or equal to 10 seconds). Some air and solenoid operated valves stroke extremely rapidly which makes it difficult to obtain an accurate measurement of their stroke times, thereby making the Code required comparison of valve stroke times from test to test impractical. Furthermore, measurement variations due to factors such as response time of the individual performing the testing, different test operators, and expected changes in system parameters, could result in data scatter that would require an increased testing frequency or repairs on rapid acting valves that are in good condition and operating properly.

Generic Letter No. 89-04, Attachment 1, Item 6, states in part: "Power operated valves with normal stroke times of 2 seconds or less are referred to by the staff as "rapid-acting valves." Relief may be granted from the requirements of Section XI, Paragraph IWV-3417(a) for these valves provided the licensee assigns a maximum limiting value of full-stroke time of 2 seconds to these valves and, upon exceeding this limit, declares the valve inoperable and takes corrective action in accordance with IWV-3417(b)." The licensee's proposed testing is in accordance with this Generic Letter position and should provide an acceptable level of quality and safety.

Based on the determination that the proposed alternate testing would provide an acceptable level of quality and safety, relief may be granted from the Code requirements as requested.

3.1.2 Testing Components When the Redundant Subsystem is Out of Service

3.1.2.1 Relief Request. The licensee has requested relief from the requirements of Section XI of performing component testing on safety related pumps or valves in their IST program that must be removed from service for testing. The licensee proposes to defer testing of these components when the redundant subsystem is out of service for maintenance or repairs, and to perform the required testing within 7 days after the out of service subsystem is returned to service.

3.1.2.1.1 Licensee's Basis for Requesting Relief--When the testing program requires equipment to be out of service and installed redundant equipment in the same system is out of service for maintenance or repair, then the testing schedule will be deferred until the train being repaired can be returned to service. Removing the redundant subsystem/loop/train from service to satisfy testing requirements when backup systems are not available would require an entry into an LCO which requires the Operations Department to either reconfigure the plant to support the system outage or would require the plant to be shutdown in a certain time period. Illinois Power Company will not enter an LCO with an action statement of less than 12 hours to perform inservice testing but will perform the required testing within 7 days after the out of service subsystem/loop/train is returned to service.

3.1.2.1.2 Evaluation--Section XI establishes the test intervals for pumps and valves that perform a safety function and requires them to be tested at the appropriate interval unless relief is requested and granted. Performing Code required testing on safety-related pumps and valves often results in the train or subsystem in which the component is located being placed out of service. The plant safety analyses assume operability of a certain number of trains of safety-related systems or subsystems to mitigate the consequences of an accident during the applicable plant modes. The plant Technical Specifications contain limiting condition for operation (LCO) Action Statement requirements to ensure that a minimum number of these safety-related trains or subsystems are operable, or a plant shutdown must be initiated. Where the LCO Action Statement time limit for changing the reactor mode allows sufficient time to perform component testing, performing the testing should not impact plant operation, therefore, entering the LCO Action Statement is not an acceptable justification for not performing the component testing. However, for cases where the LCO Action Statement time limit for changing the reactor mode does not give adequate time to perform component testing, it would be burdensome to require the licensee to remove a safety system train from service to perform Code required testing when the redundant train is out of service.

Plant analyses assume the operability of safety systems within the guidelines of the single failure criterion, however, unless the operational

readiness of key active components within these systems is routinely verified, these systems cannot be relied upon to perform their analyzed functions when called upon. Inservice testing of safety-related components is implemented by plant Technical Specifications to provide assurance of component operational readiness. When a train of a safety system is out of service for maintenance or repair, the operability of active components in the redundant train has increased safety significance and deferring the routine testing of these components may not be prudent or warranted. Because of this concern, Technical Specifications frequently require testing of redundant trains or subsystems when a safety system train or subsystem is declared out of service.

Clinton Power Station Technical Specification 4.0.2 provides for a 25% extension of specified surveillance intervals not to exceed 3.25 times the interval for any three consecutive test intervals. These allowed extensions should circumvent many of the situations where IST might require entrance into LCO Action Statements.

The licensee has not adequately demonstrated the impracticality of complying with the Code specified testing frequencies, nor have they shown that doing so would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted as requested. There might be particular cases where the LCO Action Statement would not provide sufficient time for component testing when a redundant train or subsystem is out of service. The licensee should submit specific requests for relief for the affected components in these systems. The infrequent occurrence of these situations coupled with the permitted interval extension should minimize the impact of this relief denial until any necessary specific relief requests are submitted and approved.

3.1.3 Leak Rate Testing Containment Isolation Valves

3.1.3.1 Relief Request. The licensee has requested relief from the individual valve leakage rate measurement and trending requirements of Section XI, Paragraph IWV-3420, for certain system penetrations of primary containment where there are no provisions for measuring the individual

leakage of the inboard and the outboard containment isolation valves, and proposed to measure and trend the combined leakage of these valve pairs.

3.1.3.1.1 Licensee's Basis for Requesting Relief--The Nuclear Regulatory Commission has concluded that the applicable leak rate test procedures and requirements for containment isolation valves are determined by 10CFR50, Appendix J. The ASME Code requires individual valve leak rate tests, while 10CFR50, Appendix J, allows testing valves in groups. In many cases, there are no provisions to leak rate test inboard and outboard containment isolation valves individually. Therefore, the maximum permissible leakage rate for individual valves cannot be specified. and the evaluation for individual valves cannot be performed. As the purpose of these valves is to isolate the containment, testing in groups, i.e., by containment penetration, would verify the integrity of the containment boundary.

Also, Section XI, IWV-3427(b), specifies additional requirements for valve sizes of six inches and larger, beyond the requirements of IWV-3427(a). These requirements involve the use of leak rate trending in determining subsequent test intervals. However, industry data has shown that the trending of leak rates is not a meaningful way to predict failure.

Illinois Power Company will utilize 10CFR50, Appendix J, and CPS Technical Specifications to determine the differential test pressure for these containment isolation valves. The maximum permissible leakage rate for a specific containment penetration (inboard and outboard isolation valves combined) will be specified instead of a leakage rate for individual valves as required by IWV-3426, Analysis of Leakage Rates. The evaluation of test results will be based on the penetration leakage rate (inboard and outboard isolation valves combined) instead of on the individual valve leakage rate required by IWV-3427, Corrective Action.

The trending requirements of IWV-3427(b) will not be implemented since meaningful trends cannot be established.

3.1.3.1.2 Evaluation--The leak test procedures and requirements for containment isolation valves identified by 10 CFR 50, Appendix J, are essentially equivalent to those contained in Section XI, Paragraphs IWV-3421 through -3425. Appendix J, Type C, leak rate testing adequately determines the leak-tight integrity of these valves. However, the 10 CFR 50, Appendix J, leak rate testing does not require that individual valve leakage limits be defined nor is corrective action required based on individual valve leakage rates. Therefore, it is an NRC position that the licensee must comply with the Analysis of Leakage Rates and Corrective Action requirements of IWV-3426 and -3427(a).

There are cases where it may be impractical to leak rate test inboard and outboard containment isolation valves individually due the lack of test connections or necessary isolation valves. The licensee has proposed to test these valves in groups by containment penetration and not to specify or measure the leakage rate for individual valves. System modifications would be necessary to install test taps and/or isolation valves to permit individual leak rate testing of some of these valves. It would be burdensome to require the licensee to make these modifications due to the costs involved. Section XI is a component test Code to monitor individual component condition and degradation to access their operational readiness, therefore, these valves should be individually leak rate tested where practicable. When individual leak rate testing is impractical because of the lack of necessary test taps and/or isolation valves, testing in groups can be acceptable if the group leakage limits are conservatively set such that excessive leakage through any individual valve in the group can be detected and the appropriate corrective actions taken.

Paragraph IWV-3427(b) specifies additional requirements for increased test frequencies and repair or replacement (concerning valve sizes of six in. or larger) beyond the requirements of Paragraph IWV-3427(a). Based on the input from many utilities and review of test data at some plants, trending the leak rate information from test to test does not contribute sufficient data to utilize in predicting when a given valve would exceed its leakage limit and, therefore, the usefulness of Paragraph IWV-3427(b) does not justify the burden of complying with this requirement.

Based on the adequacy of the 10 CFR 50, Appendix J, Type C, leak rate testing and the lack of usefulness of trending the leakage of valves 6 inches and larger, relief may be granted from the Section XI leak rate requirements of Paragraphs IWV-3421 through IWV-3425 and IWV-3427(b). Based on the impracticality of individually leak rate testing certain valves, the burden on the licensee if these Code requirements were imposed, relief may be granted from testing and evaluating those valves that cannot practically be individually leak rate tested in accordance with the requirements of Paragraphs IWV-3426 and IWV-3427(a), provided that the licensee leak rate tests these valves in groups and assigns maximum group leakage rate limits that are conservatively based on the smallest valve in the group so that corrective actions will be taken whenever the leak tight integrity of any of the affected valves is in question. All other containment isolation valves should be individually leak rate tested and have their leakage rates analyzed and corrective actions taken in accordance with IWV-3426 and -3427(a).

3.1.4 Valve Testing After Packing Adjustments

3.1.4.1 Relief Request. The licensee has requested relief from the requirement of Section XI, Paragraph IWV-3200, of testing valves that have undergone maintenance prior to returning them to service for the following valves in the Clinton IST program which cannot be tested during power operations. This relief would only apply if the maintenance performed was only minor packing adjustments that fall within the torque values specified by the valve manufacturers.

1B21-F022A,B,C,D	1CC073	1E32-F006	1IA008
1B21-F028A,B,C,D	1CC074	1E32-F007	1SX012A,B
1B21-F041B,C,D,F	1CC127	1E32-F008	1SX016A,B
1B21-F047A,C	1CC128	1E32-F009	1SX062A,B
1B21-F051G	1E12-F008	1E51-F013	1SX071A,B
1B21-F065A,B	1E12-F009	1G33-F001	1SX073A,B
1C11-F083	1E12-F023	1G33-F004	1SX074A,B
1CC049	1E12-F042A,B,C	1G33-F039	1SX076A,B
1CC050	1E12-F053A,B	1G33-F040	1SX105A,B
1CC053	1E21-F005	1G33-F053	1SX107A,B
1CC054	1E22-F004	1G33-F054	1WO001A,B
1CC057	1E32-F001A,E,J,N	1IA005	1WO002A,B
1CC060	1E32-F002A,E,J,N	1IA006	1WO551A,B
1CC071	1E32-F003A,E,J,N	1IA007	1WO552A,B
1CC072			

3.1.4.1.1 Licensee's Basis for Requesting Relief--Operational conditions or other circumstances may not allow the performance of full-stroke exercise and timing of valves following adjustment of stem packing without reducing load or entering the cold shutdown mode. In these situations, the valve is not taken out of service to perform packing adjustments, so the applicability of the Code requirement is unclear. Packing adjustment within limits specified by engineering personnel is preferable to allowing continued leakage and deterioration of safety-related valves because stroke-time testing cannot be performed.

Illinois Power Company will utilize engineering approved limits on maximum gland nut torque to determine whether post-maintenance testing is required following packing adjustment. These torque values, which were obtained from the various valve manufacturers, are controlled within the valve packing adjustment procedure. As long as the limiting values are not exceeded, the Shift Supervisor may waive the exercise or stroke time requirement, for the valves on the attached list, if necessitated by plant conditions or other circumstances. Stroke time tests will subsequently be performed at the next scheduled frequency identified in the ISI Program.

3.1.4.1.2 Evaluation--IWV-3200 states that if a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance (adjustment of stem packing, removal of the bonnet, stem assembly, or actuator, and disconnection of hydraulic or electrical lines are examples of maintenance that could affect valve performance parameters), and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits.

Performing any maintenance on a valve which could affect its performance is seen as removing it from service because its ability to perform its safety function is in question after the maintenance has been performed until it has been tested to demonstrate proper operation. Adjustment of valve stem packing could affect valve operability and render it incapable of changing position to perform its function. Industry experience has also demonstrated

4. When packing adjustments are performed on a valve following the proposed alternate testing of this relief request, this maintenance may not be performed on any valves in a redundant train of the same safety system or in another safety system that serves as a backup for the first system, unless the licensee has verified by previous testing that the specified torque limits are valid and should not affect valve operability.

5. All valves that undergo packing adjustments whose post maintenance testing is deferred by this relief request must be tested the first time the plant enters an operating mode which permits valve testing.

6. If failure of a valve is detected by the post maintenance testing, a root cause analysis should be performed to determine if the failure was caused or affected by the packing adjustment. If it is determined that the packing adjustment caused the valve failure, the maintenance procedure must be reevaluated and modified.

7. If the packing of a valve is adjusted more than once during an operating cycle, the second and subsequent adjustments must be followed by the Code specified post maintenance testing.

Based on the impracticality of exercising these valves during power operations and the burden on the licensee of requiring them to change plant modes to perform this testing and considering the proposed alternative of making packing adjustments that fall within the torque values supplied by the valve manufacturers, relief should be granted from the requirements of IWV-3200 for the listed valves provided the licensee complies with the items listed above.

3.1.5 Extension of Testing Intervals

3.1.5.1 Relief Request. The licensee has requested relief from the test intervals specified in the various subsections of Section XI for all pumps and valves in the IST program and proposed allowing extensions of 25%

that this could be a common mode failure mechanism which could disable more than one train of a safety system.

Some packing adjustments, if properly performed using good maintenance procedures, are minor corrective actions to stop stem leakage and may not significantly affect the performance parameters of a valve. It is burdensome for the licensee to have to shut down the reactor in order to perform valve testing as a result of making minor packing adjustments on valves which cannot be exercised during power operations. The licensee has presented bases in relief requests or cold shutdown justifications for not exercising the listed valves during power operations. The relief request bases have been evaluated in Section 4 of this TER and the cold shutdown justification bases are discussed in Appendix A. Unless relief has been denied or the testing of specific valves are discussed in Appendix C as anomalies, it is agreed that it is impractical to exercise the listed valves during power operations. However, due to the sensitive nature of this maintenance work and the possibility of common mode failure, in order to obtain relief from the Code requirements the licensee must comply with the following guidelines for stem packing adjustments.

1. The maintenance must be performed using pre-approved maintenance procedures (established procedures that have been approved by plant engineering and management) which clearly outline the steps to be taken and the torque limits for the packing gland nuts for each specific valve or group of similar valves.

2. The packing gland adjustment nut torque limits are specified by the valve manufacturer for the specific valve configuration being used (i.e., same packing material, same system working fluid, same actuating air or hydraulic pressure).

3. No modifications have been performed on the valves that could affect the valve manufacturer specified packing adjustment torque limits.

to the intervals specified in the Code not to exceed 3.25 times the specified interval for any three consecutive tests.

3.1.5.1.1 Licensee's Basis for Requesting Relief--The ASME Code Section XI, subsections specify the test frequency interval but do not specify any allowable extension. Clinton Power Station Technical Specification 4.0.2 specifies that: a) A maximum allowable extension not to exceed 25% of the surveillance interval, but b) The combined time interval for any three consecutive surveillance intervals shall not exceed 3.25 times the specified surveillance interval. Illinois Power Company will utilize CPS Technical Specification 4.0.2 allowable extension with the specified interval for all pumps and valves.

3.1 5.1.2 Evaluation--Section XI establishes the testing frequencies for all pumps and valves that perform a safety function but does not specifically permit extensions of those intervals. Often there are operational constraints or other valid concerns that make it impractical to perform testing within the Code specified interval. Since there are no provisions in the Code for extending the test interval, any testing not performed on schedule would constitute a violation. It would be impractical and burdensome for the licensee to strictly follow the Code testing intervals without extensions to cover necessary deviations.

The licensee's proposal to have a 25% extension, not to exceed 3.25 times the Code specified surveillance interval for any three consecutive surveillance intervals, is reasonable for most Code specified testing and should provide an acceptable level of quality and safety. The licensee's proposal is not considered reasonable for safety and relief valves which are tested once every five years in accordance with the schedule established by Table IWV-3510-1. The test schedule for safety and relief valves covers a long time period and already has some built in scheduling flexibility, therefore, the proposed extension should not be necessary and is not appropriate for safety and relief valves. Also, this relief request does not apply to valves which are not tested at the Code specified intervals (i.e., valves tested during refueling outages). Specific relief must have been requested and evaluated elsewhere in this TER for these components and the

evaluations of these relief requests should stipulate the appropriate alternate testing intervals.

Based on the determination that the proposed alternate testing would provide an acceptable level of quality and safety and is a reasonable method to practically implement the Code requirements, relief should be granted as requested with the exceptions noted above.

3.1.6 Leak Rate Testing Drywell Isolation Valves

3.1.6.1 Relief Request. The licensee has requested relief from the leak rate testing requirements of Section XI, Paragraph IWV-3420, for the following drywell isolation valves and proposed to verify the leak tight integrity of these valves as a group by performing the drywell bypass leakage test per Technical Specification 4.6.2.2.

1B33-F013A,B	1E31-F014	1RE019	1VQ003
1B33-F017A,B	1E31-F015	1RE020	1VQ005
1B33-F019	1E31-F017	1FP078	1WO551A,B
1B33-F020	1E31-F018	1FP079	1WO552A,B
1C41-F006	1IA007	1HG010A,B,C,D	1RF019
1C41-F336	1IA008	1HG011A,B,C,D	1RF020
1CY020	ORA028	1VQ001A,B	1SA031
1CY021	ORA029	1VQ002	1SA032

3.1.6.1.1 Licensee's Basis for Requesting Relief--The purpose of the drywell isolation valves is to contain the drywell pressure to the extent that the containment cannot be overpressurized. Individual valve leak rates are not significant to assuring drywell integrity. The sum of the valve leakages is what must be limited. The current testing of these valves is governed by Technical Specification 4.6.2.2 which requires the drywell to be pressurized and total leakage through all boundary valves be measured. Illinois Power Company will perform a drywell bypass leakage test per Technical Specification 4.6.2.2 on a refueling outage basis. This test monitors the total leakage through all valves at once. The data will be recorded but no trending will be performed.

3.1.6.1.2 Evaluation--The drywell in the Mark III containment design surrounds the reactor vesse. and the recirculation system and separates the drywell atmosphere from the containment building atmosphere. The drywell serves the function of containing steam released during an accident and directing it into the suppression pool where it is condensed, thereby limiting the peak pressure in the containment. Steam that leaks directly from the drywell into containment, bypassing the suppression pool, would not be condensed and would contribute to higher containment pressures which could overpressurize and possibly rupture the containment building. Therefore, the drywell bypass leakage rate is important and is measured per Technical Specification 4.6.2.2 at least once every 18 months.

Section XI, Paragraph IWV-3420, establishes the leak rate test requirements for Category A valves. IWV-2200(a) defines Category A valves as those for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their function. As stated in this definition, the individual leakage rate of Category A valves is important for their safety function and for this purpose the Code requires assigning individual limits and taking corrective actions when the limit for an individual valve is exceeded.

The licensee's proposed alternate testing verifies that the overall drywell leakage limit is not exceeded, however, it does not measure individual valve leakage and could not detect excessive degradation of a particular valve. Using this method, a severely degraded valve could leak up to the overall drywell leakage limit without corrective action being required.

The licensee has not adequately demonstrated the impracticality of complying with the Code requirements, nor have they shown that doing so would be a hardship without a compensating increase in the level of quality and safety. Also, the licensee's proposed alternate testing does not provide information that assures that these valves are capable of performing a Category A leak tight closure function, therefore, long term relief should not be granted as requested. Any of these valves whose seat leakage is limited to a specific maximum amount in the closed position for fulfillment

of their function, should be leak rate tested in accordance with the Code requirements to ensure that they are capable of performing their individual leak tight closure functions.

It would be burdensome to require the licensee to immediately develop test procedures to individually leak rate test these valves, therefore, an interim period should be provided to allow time to develop procedures and implement this testing. The drywell bypass leakage test, while not providing leakage rates of individual valves, does verify that the overall drywell bypass leakage rate is not excessive, which demonstrates to some degree the leak tight integrity of the listed valves. Based on the determination that immediate compliance with the Code requirements would be burdensome and considering that the proposed testing should give reasonable assurance of the operational readiness of these valves in the closed position during the interim period, interim relief should be granted for the period of one year or until the end of the next refueling outage, whichever is longer.

3.1.7 Leak Rate Testing Excess Flow Check Valves

3.1.7.1 Relief Request. The licensee has requested relief from the leak rate testing requirements of Section XI, Paragraph IWV-3420, for the excess flow check valves and proposed to verify the combined leak tight integrity of these valves by performing an Integrated Leak Rate Test (ILRT) once every 40 months, ±10 months.

3.1.7.1.1 Licensee's Basis for Requesting Relief--Excess flow check valves are not required to be individually leak rate tested (Type B or Type C) per Clinton Power Station (CPS) Technical Specifications or 10CFR50, Appendix J. However, excess flow check valves are included within the Integrated Leak Rate Test (ILRT) boundaries. Although the ILRT does not measure individual valve leakage rates, the satisfactory completion of the ILRT verifies the overall function of these valves.

No separate test or evaluation either by individual valve or by penetration will be performed on excess flow check valves. These valves are included within the Integrated Leak Rate Test (ILRT) boundaries.

3.1.7.1.2 Evaluation--Section XI, Paragraph IWV-3420, establishes the leak rate test requirements for Category A and A/C valves. IWV-2200(a) defines Category A valves as those for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their function. As stated in this definition, the individual leakage rate of Category A valves is important for their safety function and for this purpose the Code requires assigning individual limits and taking corrective actions when the limit for an individual valve is exceeded.

The excess flow check valves are installed on instrument sensing lines that penetrate the primary containment. Their function is to close when subjected to a set differential pressure across the valve to prevent excessive flow in the case of a downstream pipe break. These valves are listed as containment isolation valves in the plant Technical Specifications, therefore, they are categorized A/C in the IST program. However, they are not designed to be leak tight, but rather to restrict their opening to prevent excessive flow rates. Due to this design feature, it is impractical to individually leak rate test these valves; also there are no leakage limits specified for them. However, they should be individually verified operable when subjected to the specified differential pressure per CPS Technical Specification 4.6.4.4.

The licensee's proposal to use the ILRT to verify the function of these valves should provide a reasonable assurance that these valves are capable of performing their safety function if it is supplemented by individual valve operational tests per CPS Technical Specifications. It would be necessary to make substantial system modifications to permit testing these valves to the Code requirements. These modifications would be costly and could result in reduced system reliability. Requiring the licensee to make these modifications would be burdensome and would not provide a commensurate increase in the level of quality and safety.

Based on the determination that it is impractical to leak rate test these valves to the Code requirements, the burden on the licensee if the Code requirements were imposed, and considering the adequacy of the proposed alternate testing, relief should be granted from the leak rate testing

requirements of the Code provided that the licensee also demonstrates that each excess flow check valve actuates to restrict flow when subjected to the set differential pressure.

3.1.8 Verifying Closure of Water-Leg Keep-Fill Check Valves

3.1.8.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for the following water-leg keep-fill check valves and proposed to verify valve closure by disassembly, inspection, and manual exercise of these valves on a sampling basis during refueling outages.

Group 2	Group 3
1E22-F006	1E12-F085A, B, C
	1E21-F034

3.1.8.1.1 Licensee's Basis for Requesting Relief--The above groups of valves, although located in separate systems, have similar configurations; they are check valves located in series with no test connections provided between them to permit individual valve testing.

Groups 2 and 3 have a separate check valve in series which could be manually opened to complete the required tests but this is undesirable. The two check valves in series, although not required by regulations, provide an added assurance that the high pressure Emergency Core Cooling System (ECCS) line will not damage the lower pressure water-leg piping. By opening this separate valve locally, the operator would create a greater potential for a pipe rupture.

During each refueling outage one valve each from groups 1 and 3 (Note: Group 1 valves are addressed separately in Section 3.10.2.1 of this TER) will be disassembled, inspected, and manually full-stroke exercised on an alternating basis. If it is found that the disassembled valve's full-stroke operability is in question (i.e., worn or corroded parts), the remaining valves in the group will be disassembled, inspected, and manually full-stroke exercised during the same outage. Group 2, which is only one valve, will be

disassembled, inspected, and manually full-stroke exercised each refueling outage. The open exercise of the valves in Groups 2 and 3 (Group 1 does not require an open exercise) will be verified on a quarterly basis.

3.1.2.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of at least once every 3 months if practical or during cold shutdowns. The listed valves are stop check valves without remote or other external indication of disk position. These valves open to allow the flow of water from the water-leg pumps into the respective ECCS injection headers to keep the headers full of water. They perform a safety function in the closed position to prevent diversion of injection flow away from the reactor vessel. Each of these valves is installed in series with another check valve with no test connections between the two valves. The pair can be verified closed by leak testing, however, the lack of test connections makes it difficult to verify closure of the individual valves using conventional test methods.

The licensee proposed to verify valve closure capability by sample disassembly and inspection during refueling outages. The Minutes of the Public Meeting on Generic Letter 89-04 state that the use of disassembly to verify closure capability may be found to be acceptable depending on whether verification by flow or pressure measurements is practical. The licensee stated that the check valves in series with these valves could be manually opened to complete the required tests but that it would be undesirable. The licensee further stated that opening the series check valves in order to individually leak test the stop checks could create a greater potential for damaging the water-leg piping. It is not apparent why this testing results in an increased potential for system damage since leakage past the stop check valves should not produce pressures above the shutoff head of the water-leg pumps. The licensee has not adequately demonstrated the impracticality of performing this testing, therefore, long term relief should not be granted from the Code required test method or frequency.

Requiring the licensee to immediately develop and implement procedures to test these valves in accordance with the Code requirements would be

burdensome. An interim period of one year or until the end of the next refueling outage, whichever is longer, should be allowed to permit development of the necessary procedures to perform this testing. While disassembly and inspection is not acceptable when testing is practical, it is a valuable maintenance tool that yields a great deal of information about valve condition and as such should provide reasonable assurance of valve operational readiness during the interim period.

Based on the determination that immediate imposition of the Code requirements would be burdensome and considering that the licensee's proposal to disassemble and inspect these valves should provide a reasonable indication that they are capable of performing their safety function in the closed position during the interim period, interim relief should be granted from the Code requirements for one year or until the end of the next refueling outage, whichever is longer.

The Minutes of the Public Meeting on Generic Letter 89-04 also state that exercise testing with flow is expected to be performed after valve disassembly and inspection is completed but before returning the valve to service. This post maintenance testing provides a degree of confidence that the disassembled valve has been reassembled properly and that the disk moves freely.

3.2 Main Steam System

3.2.1 Category B/C Valves

3.2.1.1 Relief Request. The licensee has requested relief from the exercising requirements of Section XI, Paragraphs IWV-3410 and 3520, for the following valves which perform the ADS function, and proposed to exercise these valves during refueling outages.

1B21-F041B	1B21-F041D	1B21-F047A	1B21-F051G
1B21-F041C	1B21-F041F	1B21-F047C	

3.2.1.1.1 Licensee's Basis for Requesting Relief--These valves cannot be exercised quarterly during power operations because failure of a valve in the open position would place the plant in a LOCA condition. These valves should not be exercised during cold shutdowns in order to reduce the number of challenges to safety/relief valves as recommended by NUREG-0737 and a recent study on the subject (BWR Owner's Group Evaluation of NUREG-0737, Item II.K.3.16, Reduction of Challenges and Failures of Relief Valves). The maximum stroke time for these valves will not be specified since the stroke time is a function of the reactor pressure. The reactor pressure is not utilized when testing these valves. A handswitch is utilized with a special tool which reduces the valve speed to avoid damaging the seating surfaces and the disk. The stroke time recorded during the test will not be evaluated per IWV-3417 unless the valve fails to move since installation of the tool causes these times to be greater than the actual stroke time for the valve.

Illinois Power Company will exercise and stroke time these valves during refueling outages. The stroke time results will be recorded and monitored to determine if these results can be correlated to the valve condition.

3.2.1.1.2 Evaluation--IWV-3412(a) requires valves to be exercised to the position to fulfill their function quarterly if practical or during cold shutdowns, and IWV-3413(b) requires that the stroke times be measured for power operated valves. Exercising the ADS valves during power operations would result in a release of steam from the main steam lines which would cause RCS pressure disturbances and reactor power fluctuations which could lead to a reactor trip. These valves must be exercised while reactor steam pressure is available because steam pressure is the motive force. Therefore, they cannot be operated during cold shutdowns or refueling outages when steam pressure is not available. However, these valves can be exercised while going into or exiting the cold shutdown or refueling conditions. Due to the ADS valve design and materials, frequent cycling damages the valves and increases the chance that they will fail to reclose or leak excessively. Because of these concerns, the BWR Owner's Group Evaluation of NUREG-0737, recommends that the number of challenges to these valves be kept to a minimum (refer to BWR Owners Group Evaluation of NUREG-0737, Item II.K.3.16, Reduction of Challenges and Failures of Relief Valves). It would be

burdensome to require the licensee to exercise the ADS valves at a cold shutdown frequency since this testing could result in valve damage necessitating repair or replacement.

These valves typically stroke in an extremely short time, therefore, stroke time measurements using normal methods could yield results with a high degree of uncertainty due to variations in the response times of the individuals performing the testing. Further, valve stroke times are dependent on steam pressure and other system variables which may not be precisely duplicated from test to test and these variations could produce stroke time measurement fluctuations that mask changes in valve condition. Because of these factors, stroke time measurements for the ADS valves may not be sufficiently repeatable to be trended in order to detect valve degradation. It would be necessary to install special test and timing equipment to obtain accurate stroke time measurements for these valves. It would be burdensome to require the licensee to install special valve timing equipment because of the high costs involved.

The licensee's proposal to exercise these valves during refueling outages should demonstrate their ability to stroke to their safety function position and should provide a reasonable alternative to the Code exercising requirements. However, the proposed testing does not provide adequate information to monitor for valve degradation. The licensee should develop some means of testing these valves that will allow the detection of valve degradation so corrective actions can be taken when a valve's continued operability is in question.

Based on the determination that it is impractical to exercise the ADS valves during power operations or cold shutdowns, that it would be an undue burden on the licensee if the Code requirements were imposed, and considering that the licensee's proposal to exercise these valves during refueling outages provides a reasonable alternative to the Code frequency requirements, relief should be granted from the Section XI test frequency requirements for the ADS valves. The methods used to test these valves result in stroke time variations that may not reflect actual valve conditions, therefore, it is impractical to apply the corrective actions of IWV-3417(a) to these valves

and relief should be granted from those requirements. However, it is not acceptable to have no means to detect degradation of these valves to permit timely repairs prior to the valves failing to perform their safety function, therefore, the licensee should establish test conditions that are repeatable in order to yield meaningful information that could be used to monitor ADS valve condition. The licensee should also develop acceptance criteria that will result in timely valve maintenance.

3.2.2 Category C and B/C Valves

3.2.2.1 Relief Request. The licensee has requested relief from the additional tests requirements of Section XI, Paragraph IWV-3513, for the main steam safety relief valves, seven of which perform the ADS function, and proposed to replace eight of these valves during each refueling outage.

3.2.2.1.1 Licensee's Basis for Requesting Relief--The testing schedule and calculations provided in the ASME Code assure that each of the SRVs will be tested within a five year period. If a sample of the valves are tested in an outage and a failure occurs, a larger sample must be tested with the possibility of the remainder of valves being tested if another failure occurs. On-site testing of these valves is not practical and responding to failures during a refueling outage can impose economic hardship by delaying restart. An alternative is to test all of the valves during each refueling, but this alternative would increase costs and radiation exposure.

A review of the historical data for SRVs similar to those at CPS, i.e., Dikkers SRVs, found that the setpoint drift has not been significant enough to justify testing beyond the Code requirements. Therefore, testing the valves as proposed below satisfies the intent of the Code, which is to test all relief valves every five years.

Illinois Power Company will replace 8 of the 16 SRVs in each refueling outage with a refurbished replacement. The eight valves to be replaced will be an IP management decision based on the condition of each SRV. This would allow valves which are known to be leaking by the seat to be replaced.

IP will also assure that each of the 16 SRVs are refurbished at least every 5 years. This is consistent with the 5 year Code required frequency for testing relief valves. Industry experience has shown that SRVs which leak excessively have the highest potential for failing their set pressure test. At CPS, for example, of the 7 SRVs which failed their setpoint test in RF-1, only one passed its leakage test. As IP's proposed test plan will assure each of the SRVs are tested every 5 years and that the SRVs with the highest potential for failure are removed each outage, IP will not require additional valves to be tested based on failure rates.

3.2.2.1.2 Evaluation--IWV-3512 requires safety and relief valve setpoints to be tested per ASME PTC 25.3 -76 at a frequency determined by Table IWV-3510-1. The Code test frequency for these valves would be approximately 5 valves per refueling outage, assuming an 18 month reactor cycle, with all valves being tested at least once every five years. The licensee has proposed to replace 8 of these valves with valves that have been refurbished at every refueling outage, which is in excess of the number required to be tested by the Code. The licensee's proposal to replace 8 SRVs with refurbished valves each refueling outage should provide reasonable assurance of their operational readiness. However, the licensee did not indicate that they will test the removed valves during the refueling outage, record, and act upon test data for the SRVs that were removed for refurbishment. Failure to check the relief valve "as-found" setpoints could allow significant setpoint drift to go undetected. Whereas it is inconvenient to perform setpoint "as-found" testing on these valves after they are removed, it is not considered impractical or excessively burdensome.

Based on the determination that the licensee's proposed testing should provide an acceptable level of quality and safety, relief may be granted from the Code test method requirements provided the licensee records the "as-found" test data for these valves.

IWV-3513 requires additional valves to be tested if any valve from the test group fails to function properly. Further, if any of the additional valves fail to function properly, all safety/relief valves in the system must be tested during that outage. Assuming an 18 month reactor cycle as before,

if one of the original 5 valves failed the test, 3 additional valves would have to be tested, and if one of those failed, the remaining 8 valves would have to be tested. The licensee's proposed testing would test 8 valves each refueling outage, which equals the required 5 plus an additional 3, which would match the number that would be required if one of the original 5 failed to function properly. However, the licensee's proposed testing would require no further testing even if all of the eight valves tested failed to function properly. The proposal to not require additional testing based on failure rates is not conservative and does not appear to be warranted considering the high failure rate that Clinton Power Station experienced with these SRVs during RF-1 (7 out of 16 valves failed their setpoint test) and considering the high failure rates of similar valves in the nuclear industry.

Based on the determination that the proposal to not require additional valve testing based on failure rates is not supported by plant and industry failure rates for these valves, relief should not be granted from the requirements of IWV-3513.

3.3 Compressed Air Systems

3.3.1 Category A/C Valves

3.3.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1IA175, the check valve in the instrument air supply to containment, and proposed to verify reverse flow closure of this valve by performing the Appendix J, Type C, leak rate test at least once every two years.

3.3.1.1.1 Licensee's Basis for Requesting Relief--There is no way to functionally test this valve without performing a leak rate test. No direct containment leakage path is available through this valve. The leakage path through this valve is limited by the pipe cap and the piping connections to the actuator. As the probability for leakage through these connections is small, it appears to be excessive to leak test this penetration on a quarterly or cold shutdown basis.

Illinois Power Company will satisfy the exercise requirement for this 1/2 inch check valve upon performance of the leak rate test. The frequency of the exercise test will be revised to coincide with the leak rate frequency, i.e., 2 years.

3.3.1.1.2 Evaluation--This is a simple check valve which is located inside containment and is not equipped with position indication. The only practical method available to verify closure of this valve is to perform a leak test. The test connections are in. ie containment and it would require a containment entry in order to verify valve closure. Routine containment entries are not made during power operations because of high radiation levels and a potentially harsh environment. Performing this testing during cold shutdowns would subject plant personnel to increased radiation dosages and other potential hazards, and could result in a delay in returning the plant to power which would be burdensome to the licensee. It would be impractical to require the licensee to make a containment entry quarterly during power operations or during cold shutdowns in order to verify closure of this valve. The licensee's proposal to Appendix J, Type C, leak rate test this valve during refueling outages provides a reasonable assurance of its ability to perform its safety function in the closed position.

Based on the impracticality of complying with the Code frequency requirements, the burden on the licensee if the Code requirements were imposed, and considering that the licensee's proposal to verify valve closure by performing leak rate testing at least once every two years is a reasonable alternative to the Code requirements, relief should be granted as requested from the exercising interval requirements of Section XI for this valve.

3.3.1.2 Relief Request. The licensee has requested relief from the leakage rate measurement methodology requirements of Section XI, Paragraph IWV-3424, for the following valves and proposed to verify their leak tight integrity by performing a pressure drop test over a specified time. The pressure drop test will be performed at least once every two years.

1B21-F039B	1B21-F039H	1DG168	1DG171
1B21-F039C	1B21-F039K	1DG169	1DG172
1B21-F039D	1B21-F039S	1DG170	1DG173
1B21-F039E			

3.3.1.2.1 Licensee's Basis for Requesting Relief--The design of these piping systems does not facilitate the measuring of actual leak rate through these check valves. In lieu of monitoring actual leakage rates through each check valve, a pressure drop test over a specified time will be performed. This pressure drop test will not only verify the check valve has seated but will also verify the integrity of the piping system.

3.3.1.2.2 Evaluation--IWV-3424 requires the leakage rate of a valve to be determined by measuring leakage through a telltale drain or by measuring the feed rate required to maintain pressure. The licensee has stated that due to the plant design, these methods cannot be used to determine the leakage rates of these air line check valves. The licensee's proposal to perform a pressure drop test on the associated air tanks or receivers should provide equivalent leakage rate information for these valves as the Code required testing methods. Since the leakage rate of these valves can be determined by the rate of pressure loss, using a pressure drop test would not result in a reduction of the licensee's ability to detect valve degradation, however, the licensee has not identified the acceptance criteria to be used during this testing.

The licensee's proposed alternate testing would provide an acceptable level of quality and safety and relief should be granted from the requirements of IWV-3424 provided that the licensee identifies acceptance criteria for these pressure drop tests in the IST program and the test procedures. Meeting the licensee specified acceptance criteria should verify the ability of the accumulator to meet its required safety function should the compressed air system be lost.

3.4 Residual Heat Removal System

3.4.1 Category A/C Valves

3.4.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1E12-F041A, F041B, and F041C, the testable check valves in the RHR injection lines to the reactor vessel, and proposed to partial-stroke exercise these

valves during cold shutdowns and full-stroke exercise them during refueling outages.

3.4.1.1.1 Licensee's Basis for Requesting Relief--The air operators are not designed to full-stroke exercise these testable check valves. During refueling outages, the air operators will be disconnected so that the valves can be full-stroke exercised by utilizing a mechanical exerciser. Illinois Power Company will partial-stroke exercise these valves using the air operators during cold shutdowns and full stroke exercise the valves during refueling outages.

3.4.1.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months if practical or during cold shutdowns. Valves 1E12-F041A, F041B, and F041C are check valves with air operators installed to allow valve testing without establishing flow through the valves. The licensee stated that the air operators will not full-stroke exercise these valves, however, in their relief request the licensee did not provide any justification for not full-stroke exercising these valves by establishing system flow through them either quarterly during power operations or during cold shutdowns.

In their response to comment #14 in Attachment 1 of the licensee's submittal dated March 8, 1988, the licensee stated that to test these valves with flow would require the initiation of the emergency core cooling system. They further stated that injecting this water during normal operation is not practical as an undesirable power transient would be caused by the large increase in cooling water to the vessel. The licensee's stated reasons for not establishing ECCS flow into the RCS during power operations are valid concerns, however, it is not mentioned that the RHR pumps do not develop sufficient head to establish flow into the RCS when the plant is at operating pressures. Also, these valves perform the function of protecting the low pressure RHR system piping from being overpressurized by the higher RCS pressure and must be leak rate tested if they are opened. It would be impractical to require the licensee to leak test these valves quarterly. Based on the above considerations, it is impractical to exercise valves 1E12-F041A, F041B, and F041C quarterly during power operations.

In their response to comment #14 in Attachment 1 of the licensee's submittal dated March 8, 1988, the licensee stated that injecting ECCS water during cold shutdowns would degrade the chemistry of the reactor coolant to the extent that additional radwaste would be generated in cleaning up the reactor coolant system. The licensee's statement is true if the suppression pool is used as the suction source for the RHR pumps, however, the licensee has not stated why the RHR pumps cannot be lined up to take a suction from the recirculation loop while testing these valves during cold shutdowns.

The licensee has not provided an adequate technical justification for not full-stroke exercising valves 1E12-F041A, F041B, and F041C at the Code specified frequency, therefore, relief should not be granted to defer full-stroke exercising these valves until refueling outages. It is impractical to full or partial-stroke exercise these valves quarterly during power operations, however, they should be full-stroke exercised during cold shutdowns as provided for in IWV-3522.

3.4.1.2 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1E12-F475, the check valve that serves as a thermal relief on the residual heat removal line from the reactor recirculation loop between normally closed valves 1E12-F008 and 1E12-F009, and proposed to exercise this valve open during refueling outages.

3.4.1.2.1 Licensee's Basis for Requesting Relief--This valve is installed in the piping of the shutdown cooling mode of operation of the Residual Heat Removal System and is located inside the drywell. During normal operation, this line is pressurized by the reactor recirculation system. The valve is not designed to open against this pressure. Therefore, this valve cannot be exercised quarterly.

This valve cannot be exercised during cold shutdowns since the shutdown cooling mode of the Residual Heat Removal System will be in service. As this line is pressurized at all times during the cold shutdowns, an exercise test is not feasible. In refueling outages, the shutdown cooling and reactor recirculation can be isolated prior to reactor startup to facilitate the

operating of this valve. Illinois Power Company will exercise this valve during refueling outages.

3.4.1.2.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of at least once every 3 months if practical or during cold shutdowns. This valve appears to be a simple check valve that performs a thermal relief function to protect the normally isolated line between valves 1E12-F008 and 1E12-F009 from damage due to thermal expansion of trapped water. To perform this function, valve 1E12-F475 would have to open to allow flow from the isolated RHR pipe segment into the RCS. The licensee stated that this valve is not designed to open against normal operating RCS pressure, however, this does not appear to be a valid basis because the valve could not perform its design function of thermal relief protection if it could not open against normal operating RCS pressure.

It would be necessary to pressurize the pipe segment between isolation valves 1E12-F008 and 1E12-F009 to a pressure greater than normal operating RCS pressure to exercise valve 1E12-F475 open quarterly during power operations. Although there are test connections to perform this evolution, doing so would result in there being only one pressure isolation valve (1E12-F008) between low pressure RHR system piping and water at RCS operating pressure. This testing would by-pass one of the two required pressure boundary isolation valves that protect the RHR system from being overpressurized and damaged by leakage from the higher pressure RCS. In addition, this valve is located inside the drywell and access is restricted during power operations due to high radiation levels and other personnel safety hazards. Because of the above reasons, it is impractical to exercise this valve quarterly during power operations.

It would be impractical to exercise valve 1E12-F475 open during residual heat removal system shutdown cooling operations at cold shutdowns because there would be shutdown cooling flow through valves 1E12-F008 and 1E12-F009 making it impossible to establish the necessary forward flow differential pressure across this check valve to exercise it open.

To exercise this valve in accordance with the Code requirements, it would be necessary to make a system modification such as replacing this valve with a testable design. It would be burdensome to require the licensee to make system modifications solely to allow testing of this valve because of the high costs involved. The licensee's proposal to exercise this check valve during refueling outage should provide reasonable assurance of valve operational readiness.

Based on the determination that it is impractical to exercise valve 1E12-F475 during power operations or cold shutdowns, that it would be an undue burden on the licensee if the Code requirements were imposed, and considering that the licensee's proposal to exercise this valve during refueling outages provides a reasonable alternative to the Code requirements, relief should be granted from the Section XI test frequency requirements as requested.

3.4.1.3 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for closure of valves 1E12-F050A and F050B, the check valves in the RHR lines to the feedwater headers, and proposed to exercise these valves closed once every two years in conjunction with the Code required leak rate test.

3.4.1.3.1 Licensee's Basis for Requesting Relief--The valves are required to close as they are Category A/C where leakage is limited to a specific amount. As the valves do not have position indicators, the closed exercise cannot be verified without performing a leakage test. Illinois Power will exercise the valves in the closed direction in conjunction with the Code required leak rate test every two (2) years.

3.4.1.3.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months if practical or during cold shutdowns. Valves 1E12-F050A and F050B are simple check valves that do not have local or remote indication of valve obturator position, therefore, they can only be verified in the closed position by leak testing or by use of non-intrusive diagnostic techniques. The licensee requested to verify closure during leak

rate testing once every two years but did not provide an adequate technical justification for not performing this testing quarterly during power operations or during cold shutdowns. The furnished system P&ID shows test connections and isolation valves that may be appropriate for testing these valves. There is no apparent reason why this testing cannot be performed at the Code required frequency.

The licensee has not demonstrated the impracticality of exercising valves 1E12-F050A and F050B closed at the Code specified frequency nor have they shown that performing the Code testing would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted to defer exercising these valves as requested.

3.4.2 Category B Valves

3.4.2.1 Relief Request. The licensee has requested relief from the stroke time measurement requirements of Section XI, Paragraph IWV-3413, for 1E12-F095, the telltale drain isolation valve in the shutdown service water supply to the residual heat removal system, and proposed to exercise this valve quarterly but not measure its full-stroke times.

3.4.2.1.1 Licensee's Basis for Requesting Relief--Valve 1E12-F095 is interlocked with and receives signals from 1E12-F094 and 1E12-F096 and closes. There is no other mechanism (i.e. handswitch) to operate this valve and there are no position indicating lights. Therefore, performance of the stroke time test is not possible. Illinois Power Company will exercise this valve every three months.

3.4.2.1.2 Evaluation--IWV-3413(b) requires that the stroke times of power operated valves be measured whenever they are full-stroke tested. Valve 1E12-F095 is a small solenoid operated valve that is normally open to drain emergency service water leakage from the piping segment between normally closed isolation valves 1E12-F094 and 1E12-F096 to prevent contamination of the RHR system and eventually the RCS from the relatively dirty service water system. This valve does not have remote position indication or a control handswitch since its operation is controlled by

interlock signals from valves 1E12-F094 and 1E12-F096. The licensee proposed to exercise this valve quarterly, but they are not measuring valve stroke times nor have they proposed an alternative test to monitor for valve degradation.

The installation and design of this valve make compliance with the Code required stroke time measurements impractical. To measure and trend stroke times for this valve would require system modifications such as installing remote valve position indication and modifying the valve control circuitry. Requiring the licensee to make these modifications would be burdensome due to the costs and possible reduction in system reliability. However, it is not acceptable on a long term basis to not monitor for degradation of this valve, therefore, relief should not be granted as requested.

The licensee should develop some means to monitor valve condition and detect degradation. Even if system modifications are not performed to permit the measurement of trendable stroke times, it may be possible for the licensee to develop a method of measuring stroke times and verifying that they remain under a reasonable maximum stroke time limit. Alternatively it may be possible to obtain trendable stroke time data during refueling outages with only limited extra measures. It would be burdensome to require the licensee to immediately develop a means of monitoring for valve degradation, therefore, an interim period should be provided for the licensee to develop a method of performing this testing. The licensee's proposal of verifying valve operational readiness by quarterly exercising should provide an acceptable level of quality and safety during the interim period.

Based on the impracticality of measuring and trending valve full-stroke times, the burden on the licensee if the Code requirements are immediately imposed, and considering the licensee's proposed alternate testing, interim relief may be granted for 12 months or the end of the next refueling outage, whichever is longer. During this interim period the licensee should develop an adequate means of monitoring for degradation of this valve.

3.5 Low Pressure Core Spray System

3.5.1 Category A/C Valves

3.5.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1E21-F006, the testable check valve in the low pressure core spray line to the reactor vessel, and proposed to partial-stroke exercise this valve during cold shutdowns and full-stroke exercise it during refueling outages.

3.5.1.1.1 Licensee's Basis for Requesting Relief--The air operators are not designed to full-stroke exercise these testable check valves. During refueling outages, the air operators will be disconnected so that the valves can be full-stroke exercised by utilizing a mechanical exerciser. Illinois Power Company will partial-stroke exercise these valves using the air operators during cold shutdowns and full stroke exercise the valves during refueling outages.

3.5.1.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months, if practical, or during cold shutdowns. Valve 1E21-F006 is a check valve with an air operator installed to allow valve testing without establishing flow through the valve. The licensee stated that the air operator will not full-stroke exercise this valve, however, Relief Request No. 2014 (Revision 1) does not provide any justification for not full-stroke exercising this valve by establishing system flow through it either quarterly during power operation or during cold shutdowns.

In the response to comment #14 in Attachment 1 of the licensee's submittal dated March 8, 1988, the licensee stated that to test this valve with flow would require the initiation of the emergency core cooling system and injecting ECCS water into the reactor during normal operation is not practical as an undesirable power transient would be caused by the large increase in cooling water to the vessel. The above basis for not establishing ECCS flow into the RCS during power operations is a valid

reason to not exercise this valve with flow quarterly. Besides, there is no means of establishing flow through this valve when the reactor is at power because the low pressure core spray pump does not develop sufficient head to overcome normal operating RCS pressures. System modifications such as installing a full flow test loop would be necessary to permit full-stroke exercising this valve at power. It would be burdensome to require the licensee to perform these modifications due to the costs involved.

This valve performs a pressure boundary isolation function to protect the low pressure core spray system piping from being overpressurized by the higher RCS pressure. Therefore, if this valve is opened for testing, it must be leak rate tested and requiring the licensee to leak rate test this valve quarterly would be unduly burdensome. Based on the above considerations, it is impractical to full or part-stroke exercise valve 1E21-F006 quarterly during power operations.

In their submittal dated March 8, 1988, the licensee stated that injecting ECCS water during cold shutdowns would degrade the chemistry of the reactor coolant to the extent that additional radwaste would be generated in cleaning up the reactor coolant system. RCS chemistry problems could result if the suppression pool with its low quality water is used as the suction source for the low pressure core spray pump, however, the licensee has not adequately shown the impracticality of performing this testing nor have they explained why the pump cannot be lined up to take a suction from the recirculation loop while testing this valve during cold shutdowns.

The licensee has not provided an adequate technical justification for not full-stroke exercising valve 1E21-F006 at the Code specified frequency, therefore, relief should not be granted as requested. It is impractical to full or partial-stroke exercise this valve quarterly during power operations, therefore, it should be full-stroke exercised during cold shutdowns as provided for in IWV-3522.

3.6 High Pressure Core Spray System

3.6.1 Category A/C Valves

3.6.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1E22-F005, the testable check valve in the high pressure core spray line to the reactor vessel, and proposed to partial-stroke exercise this valve during cold shutdowns and full-stroke exercise it during refueling outages.

3.6.1.1.1 Licensee's Basis for Requesting Relief--The air operators are not designed to full-stroke exercise these testable check valves. During refueling outages, the air operators will be disconnected so that the valves can be full-stroke exercised by utilizing a mechanical exerciser. Illinois Power Company will partial-stroke exercise these valves using the air operators during cold shutdowns and full stroke exercise the valves during refueling outages.

3.6.1.1.2 Evaluation--Valve 1E22-F005 is a check valve with an air operator installed to allow valve testing without establishing flow through the valve. The licensee stated that the air operator will not full-stroke exercise this valve, however, their relief request did not provide any justification for not full-stroke exercising this valve by establishing system flow through it either quarterly during power operations or during cold shutdowns.

In the response to comment #14 in Attachment 1 of the licensee's submittal dated March 8, 1988, the licensee stated that to test this valve with flow would require the initiation of the emergency core cooling system (ECCS). They further stated that injecting this water during normal operation is not practical as an undesirable power transient would be caused by the large increase in cooling water to the vessel. Based on the above considerations, it is impractical to establish ECCS flow into the RCS to exercise valve 1E22-F005 quarterly during power operations. System modifications such as installing a full flow test loop would be necessary to permit full-stroke exercising this valve at power. It would be burdensome to

require the licensee to perform these modifications due to the costs involved.

This valve performs a pressure boundary isolation function to protect high pressure core spray system piping from being overpressurized by RCS pressure. Therefore, if this valve is opened for testing, it must be leak rate tested and requiring the licensee to leak rate test this valve quarterly would be unduly burdensome. Based on the above considerations, it is impractical to full or part-stroke exercise valve 1E21-F006 quarterly during power operations.

In their submittal dated March 8, 1988, the licensee stated that injecting ECCS water during cold shutdowns would degrade the chemistry of the reactor coolant to the extent that additional radwaste would be generated in cleaning up the reactor coolant system. RCS chemistry problems could result if the suppression pool with its low quality water is used as the suction source for the high pressure core spray pump, however, the licensee has not adequately shown the impracticality of performing this testing nor have they explained why the pump cannot be lined up to take a suction from the reactor core isolation cooling (RCIC) storage tank while testing this valve during cold shutdowns.

The licensee has not provided an adequate technical justification for not full-stroke exercising valve 1E22-F005 at the Code specified frequency, therefore, relief should not be granted as requested. It is impractical to full or partial-stroke exercise this valve quarterly during power operations, therefore, it should be full-stroke exercised during cold shutdowns as provided for in IWV-3522.

3.7 Reactor Core Isolation Cooling System

3.7.1 Category A/C Valves

3.7.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for testable check valve 1E51-F066, the RCIC injection header check valve, and

proposed to exercise this valve with shutdown cooling flow during cold shutdowns.

3.7.1.1.1 Licensee's Basis for Requesting Relief--The design flow for this injection valve is 600 GPM. During the reactor shutdown cooling mode, the flow through this line is normally 400 GPM and is restricted to a maximum of 500 GPM. This restriction is in place to assure the cool down rate for the vessel is not exceeded. This difference in flow rates is not considered significant in determining valve operability.

This valve will be exercised utilizing the flow supplied by the residual heat removal system during the reactor shutdown cooling mode. This flow is normally 400 GPM and is restricted to a maximum of 500 GPM.

3.7.1.1.2 Evaluation--Valve 1E51-F066 is the RCIC injection check valve located inside the drywell. This valve was equipped with an air operator which part-stroke exercised the valve without establishing flow through it. The licensee stated in Relief Request No. 2020, which was submitted with Revision 2 of the Clinton IST program, that the air operator was to be removed during the first refueling outage.

In Relief Request No. 2020 (Revision 1), submitted with Revision 5 of the Licensee's IST program, the licensee proposed to exercise valve 1E51-F066 by passing a shutdown cooling flow rate of 400 to 500 gpm through it during cold shutdowns. The maximum required accident condition flow rate for this valve is 600 gpm. Generic Letter 89-04, Attachment 1, Position 1, established the criteria for verifying a full-stroke exercise of a check valve using flow. This Generic Letter position lists 6 items that must be addressed, as a minimum, to substantiate the acceptability of any alternate technique for meeting the Code exercising requirements. The first item requires the licensee to document in their IST program the impracticality of performing a full flow test on the affected valves. The licensee has not adequately shown the impracticality of full flow testing valve 1E51-F066 in their IST program.

This valve performs a pressure boundary isolation function to protect RCIC system piping from being overpressurized by RCS pressure. Opening this valve during power operations would remove one of the barriers between the RCS and the RCIC system which could increase the possibility of system damage due to overpressurization. The GE Standard Technical Specifications require that pressure isolation valves be leak rate tested within 24 hours following valve actuation. Therefore, if this valve is exercised open for testing, the licensee may be required to leak rate test it within 24 hours. Requiring the licensee to leak rate test this valve quarterly would be unduly burdensome. Based on the above considerations, it is impractical to full or part-stroke exercise valve 1E51-F066 quarterly during power operations.

The licensee's proposed exercise test of this valve does not meet the Generic Letter 89-04 criteria for a full-stroke exercise because the maximum required accident flow rate is not established through the valve. However, the 400 to 500 gpm flow through this valve during cold shutdown testing is a substantial flow rate and may open the valve disk sufficiently to allow passage of the required flow rate. The licensee should actively pursue the use of non-intrusive diagnostic techniques to demonstrate that this valve opens sufficiently during partial flow testing.

Not verifying the full-stroke capability of this valve during periodic valve testing does not provide an acceptable level of quality and safety, therefore, long term relief should not be granted as requested. The licensee should full-stroke exercise valve 1E51-F066 as required by the Code. It would be burdensome to require the licensee to immediately develop a means of full-stroke exercising this valve, therefore, an interim period should be provided for the licensee to develop a method of performing this testing. The licensee's proposal of verifying valve operational readiness by performing a substantial partial-stroke exercise during cold shutdowns should provide an acceptable level of quality and safety during the interim period.

Based on the impracticality of full or part-stroke exercising valve 1E51-F066 quarterly during power operations, the burden on the licensee if the Code requirements were immediately imposed, and considering the licensee's proposed alternate testing, interim relief may be granted for 1E

months or until the end of the next refueling outage, whichever is longer. During this interim period the licensee should develop a method of full-stroke exercising this valve during cold shutdowns.

3.7.1.2 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for closure of valve 1E51-F040, the check valve in the RCIC turbine exhaust line to the suppression pool, and proposed to exercise this valve closed once every two years in conjunction with the Code required leak rate test.

3.7.1.2.1 Licensee's Basis for Requesting Relief--The valves are required to close as they are Category A/C where leakage is limited to a specific amount. As the valves do not have position indicators, the closed exercise cannot be verified without performing a leakage test. Illinois Power will exercise the valves in the closed direction in conjunction with the Code required leak rate test every two (2) years.

3.7.1.2.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months if practical or during cold shutdowns. Valve 1E51-F040 is a simple check valve that does not have local or remote indication of valve obturator position, therefore, it can only be verified in the closed position by l testir or by use of non-intrusi iagnostic techniques. The licensee requeste o verify closure during rate testing once every two years but did not provide an adequate technical justification for not performing this testing quarterly during power operations or during cold shutdowns. The furnished system P&ID shows test connections and isolation valves that may be appropriate for testing this valve. There is no apparent reason why this testing cannot be performed at the Code required frequency.

The licensee has not demonstrated the impracticality of exercising valve 1E51-F040 closed at the Code specified frequency nor have they shown that performing the Code testing would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted to defer exercising this valve as requested.

3.8 Standby Liquid Control System

3.8.1 Category A/C Valve

3.8.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraphs IWV-3520, for 1C41-F336, a check valve in the standby liquid control header to the reactor pressure vessel, and proposed to exercise this valve during refueling outages.

3.8.1.1.1 Licensee's Basis for Requesting Relief--This check valve is downstream of the explosive injection valves which are only required to be opened during refueling outages. The check valve is totally enclosed without any provisions for exercising the valve externally. Illinois Power Company will full stroke exercise this check valve every refueling outage. The open direction exercise will be verified with system flow and the closed direction exercise will be verified with a leakage test.

3.8.1.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of at least once every 3 months or during cold shutdowns if quarterly testing is not practical. This check valve does not have a remote operator and is located inside the drywell and is, therefore, inaccessible and cannot be exercised without passing flow through it during power operations. To exercise this valve with flow would require firing an explosive squib valve and initiating standby liquid control system flow into the RCS. It is impractical to establish standby liquid control flow into the RCS during power operations because the standby liquid control system would have to be removed from service and flushed prior to testing to preclude injecting water containing boron into the RCS and the explosive valve would have to be replaced after testing.

Performing this testing during cold shutdowns would be burdensome to the licensee because it could result in delays in returning the reactor to power due to the time required to flush the system and replace the explosive valve.

The licensee's proposal to exercise this check valve open during refueling outages by firing the squib valve and establishing standby liquid control flow into the RCS and leak testing it at refueling outages to verify closure should provide a reasonable assurance of valve operational readiness.

Based on the impracticality of exercising valve 1C41-F336 quarterly during power operations and during cold shutdowns, the burden on the licensee if the Code requirements were imposed, and considering the licensee's proposed testing, relief should be granted from the exercising frequency requirements of IWV-3520.

3.8.1.2 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, closure of valve 1C41-F006, the check valve in the standby liquid control injection line to the reactor vessel, and proposed to exercise this valve closed once every two years in conjunction with the Code required leak rate test.

3.8.1.2.1 Licensee's Basis for Requesting Relief--The valves are required to close as they are Category A/C where leakage is limited to a specific amount. As the valves do not have position indicators, the closed exercise cannot be verified without performing a leakage test. Illinois Power will exercise the valves in the closed direction in conjunction with the Code required leak rate test every two (2) years.

3.8.1.2.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months if practical or during cold shutdowns. Valve 1C41-F006 is a simple check valve that does not have local or remote indication of valve obturator position, therefore, it can only be verified in the closed position by leak testing or by use of non-intrusive diagnostic techniques. The licensee requested to verify closure during leak rate testing once every two years but did not provide an adequate technical justification for not performing this testing quarterly during power operations or during cold shutdowns.

This valve is located in the common injection header for both trains of the standby liquid control system. Verifying valve closure by leak testing would require isolation of the injection header which would disable an entire safety system and cause entry into a relatively short Technical Specification Limiting Condition for Operation Action Statement. Because of the above reason, it is impractical to test this valve quarterly during power operation. It would be necessary to make system modifications to add a second injection path and appropriate isolation valves to permit quarterly valve testing. Requiring the licensee to make these modifications would be burdensome because of the high costs involved.

The licensee has indicated in their IST program that this valve is full-stroke exercised open during cold shutdowns and there is no apparent reason that it cannot be verified closed at that frequency. Therefore, the licensee should verify valve closure during cold shutdowns. Requiring the immediate development and implementation of the necessary procedures to test this valve during cold shutdowns would impose an unreasonable burden on the licensee. The proposed testing, while not acceptable on a long term basis, should provide an indication of valve operational readiness sufficient for an interim period until procedures are prepared and implemented.

Based on the above reasons, interim relief should be granted for a period of one year or until the end of the next refueling outage, whichever is longer, after which time the licensee should verify closure of this valve during cold shutdowns.

3.9 Control Rod Drive Hydraulic System

3.9.1 Category A/C Valves

3.9.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1C11-F122, the control rod drive water header check valve, and proposed to exercise this normally open check valve to the closed position during refueling outages.

3.9.1.1.1 Licensee's Basis for Requesting Relief--This check valve is a containment isolation valve which provides drive water to the hydraulic control units and seal flow to the reactor recirculation pumps. This is a normally open valve and cannot be tested during normal plant operation or cold shutdowns since testing this valve requires that the CRD system be shutdown causing the control rods' motion to be prevented and stopping seal flow to the reactor recirculation pumps. Although the reactor recirculation pumps are not required for safe shutdown of the plant, these pumps are used to assure uniform temperatures are maintained in the vessel during cold shutdowns. Exercising this valve would also allow air to enter the CRDs which would require substantial venting of the system to remove. Illinois Power Company will exercise this valve during refueling outages.

3.9.1.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of once every 3 months, if practical, or during cold shutdowns. 1C11-F122 is a check valve that is normally open to provide drive water to the control rod drive hydraulic control units and seal water to the reactor recirculation pumps. Exercising this valve to the closed position would stop flow to the supplied components which would prevent normal control rod movements and possibly damage the reactor recirculation pumps if they are operating. It is impractical to perform this testing quarterly during power operations because control rod movements and recirculation pump operation are an integral part of normal power operations and stopping them for testing would require a plant power reduction or shutdown.

During most cold shutdowns, at least one of the reactor recirculation pumps are left running to maintain coolant flow through the reactor vessel to prevent stratification of the coolant in the vessel. Because of the damage that could occur to this major plant equipment if seal water flow were interrupted during pump operation, it is impractical to exercise this valve during those cold shutdowns when a recirculation pump remains in operation. Securing drive flow to the hydraulic control units during cold shutdowns could permit air to enter the system which would necessitate extensive venting which could delay the return to power from cold shutdown, therefore, it is burdensome to require the licensee to exercise valve 1C11-F122 during cold shutdowns.

The licensee's proposal to verify reverse flow closure of this check valve during refueling outages should provide a reasonable assurance of valve operational readiness.

Based on the impracticality of exercising valve 1C11-F122 quarterly during power operations or during cold shutdowns and the burden on the licensee if the Code requirements were imposed and considering the licensee's proposed testing, relief should be granted as requested from the exercising frequency requirements of IWV-3520.

3.9.1.2 Relief Request. The licensee has requested relief from the exercising requirements of Section XI, Paragraph IWV-3520, for the hydraulic control unit valves number 115, the check valves (typical of 145 each) in the line from the charging water header, and proposed to test these valves during refueling outages by performing an accumulator pressure drop test.

3.9.1.2.1 Licensee's Basis for Requesting Relief--Illinois Power Company requests relief from the Code requirements because it is not feasible to individually exercise these valves without securing the CRD pumps. The reverse flow exercising and leakage tests of these check valves will be satisfied by the performance of an accumulator pressure drop test, with the pumps secured, during refueling outages. This test will verify the valve is closed by monitoring the accumulator pressure which would indicate any leakage past the check valve. Illinois Power Company will satisfy the leakage and exercise tests for these valves upon performance of the accumulator pressure drop test on a refueling outage frequency.

3.9.1.2.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of at least once every 3 months, if practical, or during cold shutdowns. The hydraulic control unit (HCU) valves numbered 115 cannot be tested without stopping the control rod drive (CRD) pumps which provide water to charge the HCU accumulators. The CRD pumps also provide drive water for normal rod motion and cooling water flow to the CRDs, stopping these pumps during power operations causes a loss of normal control rod motion and could result in damage to the CRDs due to loss of cooling water flow and could

...ibly cause a reactor shutdown. Therefore, it is impractical to secure the CRD pumps quarterly during power operations to exercise the HCU No. 115 valves.

The CRD pumps also provide seal water flow to the reactor recirculation pumps and during most cold shutdowns at least one of the reactor recirculation pumps remain operating to maintain coolant flow through the reactor vessel to prevent stratification of the coolant in the vessel. Because of the damage that could occur to this major plant equipment if seal water flow were interrupted during pump operation, it is impractical to stop the CRD pumps to exercise the HCU No. 115 valves during those cold shutdowns when a recirculation pump remains in operation. Securing CRD pump flow to the hydraulic control units during cold shutdowns could permit air to enter the system which would necessitate extensive venting which could delay the return to power from cold shutdown, therefore, it is burdensome to require the licensee to exercise these valves during cold shutdowns.

The licensee's proposal to verify reverse flow closure of these check valves during refueling outages by performing an accumulator pressure drop test with the CRD pumps off should provide a reasonable assurance of valve operational readiness.

Based on the impracticality of exercising the HCU No. 115 valves quarterly during power operations or during cold shutdowns, the burden on the licensee if the Code requirements were imposed, and considering the licensee's proposed testing, relief should be granted as requested from the exercising requirements of IWV-3520 for these valves.

3.9.2 Category B Valves

3.9.2.1 Relief Request. The licensee has requested relief from the exercising and stroke time measurement requirements of Section XI, Paragraph IWV-3410, for HCU valves numbers 126, 127, and 139 (typical of 145 each), the control rod drive scram inlet and exhaust valves, and proposed to test these valves by scram timing control rod drives in accordance with plant Technical Specifications.

scram insertion times. If the above test is used to verify the operability of scram inlet and outlet valves, it should be specifically documented in the IST program."

The licensee's proposal to exercise these valves by performing the Technical Specification control rod scram tests on 10% of the control rod drives every 120 days and 100% following any core alteration or extended outage should provide a reasonable assurance of valve operational readiness.

Requiring the licensee to scram all control rods quarterly during power operations would be a hardship without a compensating increase in safety. Based on the determination that the licensee's proposed testing is in accordance with Generic Letter 89-04, Attachment 1, Item 7, and would provide reasonable assurance of operational readiness, relief may be granted as requested.

3.9.3 Category C Valves

3.9.3.1 Relief Request. The licensee has requested relief from the exercising requirements of Section XI, Paragraph IWV-3520, for HCU valves number 114 (typical of 145 each), the control rod drive scram exhaust header check valves, and proposed to test these valves by scram timing control rod drives in accordance with plant Technical Specifications.

3.9.3.1.1 Licensee's Basis for Requesting Relief--These valves operate simultaneously when a scram signal is present. As these valves are skid mounted with no provisions for testing, it is not feasible to individually test each valve. The current testing, per Technical Specification 4.1.3.2, monitors individual rod scram time. This testing, although individual valve stroke time is not known, would assure that each valve stroked in sufficient time to allow the rod to move to its safety position in the required time.

Testing of the control rod drive per Technical Specification 4.1.3.2 will be performed in lieu of the Code requirements. The Technical Specifications require all rods to be tested following any core alterations

3.9.2.1.1 Licensee's Basis for Requesting Relief--These valves operate simultaneously when a scram signal is present. As these valves are skid mounted with no provisions for testing, it is not feasible to individually test each valve. The current testing, per Technical Specification 4.1.3.2, monitors individual rod scram time. This testing, although individual valve stroke time is not known, would assure that each valve stroked in sufficient time to allow the rod to move to its safety position in the required time.

Testing of the control rod drive per Technical Specification 4.1.3.2 will be performed in lieu of the Code requirements. The Technical Specifications require all rods to be tested following any core alterations and any prolonged outages (120 days). Ten percent of the rods are tested on a rotating basis every 120 days and any rod is tested following maintenance.

3.9.2.1.2 Evaluation--Exercising these valves would result in the associated control rod being rapidly inserted into the reactor core which would cause power disturbances. The NRC staff position on exercising these HCU valves and measuring their full-stroke times is contained in Generic Letter 89-04, Attachment 1, Item 7. The Generic Letter states: "... for those control rod drive system valves where testing could result in the rapid insertion of one or more control rods, the rod scram test frequency identified in the facility TS may be used as the valve testing frequency to minimize rapid reactivity transients and wear of the control rod drive mechanisms."

The Generic Letter further states: "The scram inlet and outlet valves are power operated valves that full-stroke in milliseconds and are not equipped with indication for both positions, therefore, measuring their full-stroke time as required by the Code may be impractical. Verifying that the associated control rod meets the scram insertion time limits defined in the plant TS can be an acceptable alternate method of detecting degradation of these valves. Also, trending the stroke times of these valves may be impractical and unnecessary since they are indirectly stroke timed and no meaningful correlation between the scram time and valve stroke time may be obtained, and furthermore, conservative limits are placed on the control rod

and any prolonged outages (120 days). Ten percent of the rods are tested on a rotating basis every 120 days and any rod is tested following maintenance.

3.9.3.1.2 Evaluation--The licensee's justification in Relief Request No. 2024 does not specifically address these check valves since it deals mainly with the Category B valves 126, 127, and 139, however, the same basic concerns apply and the specific concerns are readily apparent. These valves are simple check valves in the line from the control rod drives to the scram discharge volume and the only way to exercise them is to establish flow through the valves into the scram discharge volume. It would be necessary to open the scram valves (HCU No. 127) in order to establish flow through the HCU No. 114 valves and this would result in the associated control rapidly inserted into the reactor core which would cause power disturbances. The NRC staff position on exercising these HCU valves is contained in Generic Letter 89-04, Attachment 1, Item 7. The Generic Letter states: "... for those control rod drive system valves where testing could result in the rapid insertion of one or more control rods, the rod scram test frequency identified in the facility TS may be used as the valve testing frequency to minimize rapid reactivity transients and wear of the control rod drive mechanisms."

The licensee's proposal to exercise the HCU No. 114 valves by performing the Technical Specification control rod scram tests on 10% of the control rod drives every 120 days and 100% following any core alteration or extended outage should provide a reasonable assurance of valve operational readiness. Valve degradation would show up in increased rod scram times.

Requiring the licensee to scram all control rods quarterly during power operations would be a hardship without a compensating increase in safety. Based on the determination that the licensee's proposed testing is in accordance with Generic Letter 89-04, Attachment 1, Item 7, and would provide reasonable assurance of operational readiness, relief may be granted as requested.

3.9.3.2 Relief Request. The licensee has requested relief from the exercising requirements of Section XI, Paragraph IWV-3520, for CRD hydraulic control unit valve number 138 (typical of 145 valves), the CRD cooling water check valves, and proposed to test these valves by performing the "notch" test of the control rod drives in accordance with the plant Technical Specifications.

3.9.3.2.1 Licensee's Basis for Requesting Relief--Failure of these valves to reverse flow exercise would be identified by performing a "notch" test. The notch test is required per Technical Specification 4.1.3.1.2 which moves each withdrawn CRD one notch every 7 days and every 24 hours if one CRD is immovable as a result of friction. The failure of valve 138 would be determined by the inability to meet the acceptance criteria of this surveillance. The CRD would "double-notch" if valve 138 did not properly exercise. A "double-notch" is where the CRD would not be able to move one notch at a time.

3.9.3.2.2 Evaluation--These valves are simple check valves without position indication. They are in the cooling water lines to the CRDs and perform a safety function in the closed position to prevent the diversion of insertion water flow away from the CRDs. Industry experience has shown that, even with a CRD pump operating, there is sufficient differential pressure across the HCU No. 138 valves during normal rod movement that if they failed to close, the rod would not notch properly which would be detected so that corrective actions could be taken. The licensee proposed to verify closure of these valves by performing the "notch" test of the control rod drives in accordance with the plant Technical Specifications. The NRC staff position on exercising these HCU valves is contained in Generic Letter 89-04, Attachment 1, Item 7.

The licensee's proposal to verify the reverse flow closure of the HCU No. 138 valves by performing control rod notch testing at the frequency required by the Technical Specifications should provide a reasonable assurance of valve operational readiness. Valve failure or severe degradation would show up in improper notching of a rod during this testing.

Based on the determination that the licensee's proposed testing is in accordance with Generic Letter 89-04, Attachment 1, Item 7, and would provide an acceptable level of quality and safety, relief may be granted as requested.

3.10 Reactor Water Cleanup System

3.10.1 Category A Valves

3.10.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3410, for the following reactor water cleanup system containment isolation valves, and proposed to exercise these valves during refueling outages.

1G33-F001	1G33-F039	1G33-F053
1G33-F004	1G33-F040	1G33-F054

3.10.1.1.1 Licensee's Basis for Requesting Relief--The reactor water cleanup (RT) system is in operation during both normal plant operation and cold shutdowns. Closing these valves would require the RT system to be out of service. A specific time to test the six valves in the relief request cannot be given. Lengths of test vary due to plant conditions. Different plant conditions require the operations department to realign other plant systems to support the RT system outage.

The RT system is required to maintain the water quality limits of the reactor coolant. Removing this system from operation for any length of time is limited except in cases of equipment failures or other extenuating circumstances. Allowing the quality of the reactor coolant to degrade any amount is not considered desirable and should be restricted. Therefore, Illinois Power will stroke these valves only during refueling outages.

3.10.1.1.2 Evaluation--These are normally open valves that are required to close to perform their isolation function. Closing these valves would stop reactor water cleanup flow. Stopping system flow and testing these valves and then restoring the system to service during power operations would be an involved evolution which could take a great deal of time. If

cleanup flow remained stopped for an extended period, water chemistry would degrade which could result in exceeding a Technical Specification water quality limit. Therefore, it is impractical stop cleanup flow to exercise these valves quarterly during power operations.

The licensee's justification does not adequately demonstrate the impracticality or undue hardship of exercising these valves during cold shutdowns. It is not desirable to allow the quality of the reactor coolant to degrade during cold shutdowns, however, the licensee indicated in their submittal dated March 8, 1988, that this testing would not result in the water quality degrading to the point where the Technical Specification limit is reached nor should any procedural limit be reached. The increased level of quality and safety provided by testing these valves during cold shutdowns should outweigh the degradation in reactor water quality that might occur. On this basis, relief should not be granted as requested and these valves should be exercised during cold shutdowns as required by the Code.

3.10.2 Category C Valves

3.10.2.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1G33-F051, 1G33-F052A, and 1G33-F052B, the reactor water cleanup system return check valves, and proposed to verify valve closure by disassembly, inspection, and manual exercise of these valves on a sampling basis during refueling outages.

3.10.2.1.1 Licensee's Basis for Requesting Relief--The above groups of valves (Note: valves 1G33-F051, 1G33-F052A, and 1G33-F052B constitute Group 1 in Relief Request No. 2008, Revision 2), although located in separate systems, have similar configurations; they are check valves located in series with no test connections provided between them to permit individual valve testing.

Groups 2 and 3 have a separate check valve in series which could be manually opened to complete the required tests but this is undesirable. The two check valves in series, although not required by regulations, provide an

added assurance that the high pressure Emergency Core Cooling System (ECCS) line will not damage the lower pressure water-leg piping. By opening this separate valve locally, the operator would create a greater potential for a pipe rupture.

During each refueling outage one valve each from groups 1 and 3 will be disassembled, inspected, and manually full-stroke exercised on an alternating basis. If it is found that the disassembled valve's full-stroke operability is [illegible]tion (i.e., worn or corroded parts), the remaining valves in the g[illegible] isassembled, inspected, and manually full-stroke exercised du[illegible]age. Group 2, which is only one valve, will be disas[illegible]ed, and manually full-stroke exercised each refueling outag[illegible]se of the valves in Groups 2 and 3 (Group 1 does not require a[illegible]) will be verified on a quarterly basis.

3.10.2.1.2 Evaluation--These are simple check valves that are normally open to allow the flow of water from the reactor water cleanup system back to the reactor vessel. To exercise these valves closed would require stopping reactor water cleanup flow which would result in a gradual degradation of the reactor water chemistry. Stopping reactor water cleanup flow is not an immediate concern, however, the procedure to stop and restart this flow is an involved procedure that takes several hours to complete. Therefore, it is impractical to stop reactor water cleanup flow during power operations to perform this valve testing.

These valves do not have vents or drains between them to allow them to be individually verified in the closed position without the use of non-intrusive valve diagnostics or valve disassembly. The Minutes of the Public Meeting on Generic Letter 89-04 state that the use of disassembly to verify closure capability may be found to be acceptable depending on whether verification by flow or pressure measurements is practical. The licensee has shown the impracticality of verifying the reverse flow closure of these valves individually by leak testing or observation of system parameters. The licensee's proposed disassembly and inspection program appears to be the only practical alternate exercising method available for these valves. However,

the NRC staff considers valve disassembly and inspection to be a maintenance procedure that is not equivalent to exercising produced by fluid flow. This procedure has risks which may make its routine use as a substitute for testing undesirable when some method of testing is possible. Check valve disassembly is a valuable maintenance tool that can provide a great deal of information about a valve's internal condition and as such should be performed under the maintenance program at a frequency commensurate with the valve type and service. The licensee should actively pursue the use of non-intrusive diagnostic techniques such as acoustics or radiography to demonstrate that these valves close when subjected to reverse flow conditions.

The Minutes of the Public Meeting on Generic Letter 89-04 also state that partial-stroke exercise testing with flow is expected to be performed after valve disassembly and inspection is completed but before returning the valve to service. This post inspection testing provides a degree of confidence that the disassembled valve has been reassembled properly and that the disk moves freely.

Based on the determination that it is impractical to verify the reverse flow closure of these valves individually by leak testing, the burden on the licensee of making system modifications to permit individual valve leak testing, and considering that the licensee's proposal to disassemble and inspect these valves should provide a reasonable indication that they are capable of performing their safety function in the closed position, relief may be granted from the exercising requirements of the Code provided the licensee exercises the valves open after they have been reassembled. Further, the licensee should investigate the use of non-intrusive diagnostic techniques to verify the reverse flow closure capability of these valves. If another method is developed to verify the reverse flow closure capability of these valves, this relief request should be revised or withdrawn as appropriate.

3.11 Shutdown Service Water System

3.11.1 Category B Valves

3.11.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3410, for 1SX016A and 1SX016B, the spent fuel pool emergency makeup valves from the shutdown service water system, and proposed to exercise these valves and measure their stroke times during refueling outages.

3.11.1.1.1 Licensee's Basis for Requesting Relief--Testing these valves will allow lake water into the fuel pools thereby affecting the chemistry of a large quantity of water in the pools. Cleanup of the fuel pool water will generate additional solid radwaste and delay the plant startup. Testing these valves during refueling outages will ensure that there is sufficient time to accomplish these activities.

3.11.1.1.2 Evaluation--These valves isolate the shutdown service water supply to the spent fuel pool and open to supply emergency makeup water to the fuel pool if normal cooling and makeup has failed. The shutdown service water is lake water and is low quality water that would degrade the water chemistry of the spent fuel pool. Placing this low quality water into the fuel pool could result in exceeding chemistry limits for the fuel pool which would necessitate flushing the pool to cleanup the water and restore it to the proper chemistry control ranges. Cleaning up the fuel pool water would involve flushing the pool which would take a significant amount of time and generate additional radioactive wastes. It would be an undue hardship to require the licensee to exercise these valves and perform this cleanup quarterly during power operations.

Performing this testing and cleanup of the fuel pool during cold shutdowns may take sufficient time that it could delay startup from the shutdown.

The licensee's proposal to exercise and measure the stroke times of these valves during refueling outages should provide a reasonable assurance

of valve operational readiness. Compliance with the Code requirements would result in hardship or unusual difficulty for the licensee without a compensating increase in the level or quality of safety, therefore, relief should be granted as requested.

3.11.1.2 Relief Request. The licensee has requested relief from the exercising and stroke time measurement requirements of Section XI, Paragraph IWV-3410, for the following shutdown service water deluge valves for the standby gas treatment charcoal beds, the makeup air filter package, and the supply air filter package, and proposed to exercise and measure the stroke times of these valves during refueling outages.

1SX071A	1SX074A	1SX105A
1SX071B	1SX074A	1SX105B
1SX073A	1SX076A	1SX107A
1SX073B	1SX076B	1SX107B

3.11.1.2.1 Licensee's Basis for Requesting Relief--Testing these valves will flood the charcoal beds of the control room HVAC system. This would cause these trains to become inoperable and would require replacement of the charcoal. In order to avoid flooding the charcoal beds or removal of the charcoal, the shutdown service water system main header would be required to be drained and declared inoperable. The shutdown service water system provides cooling water to ECCS systems and various other systems required to be operable in all modes of operation.

Both of the above options are not possible during cold shutdown testing. The first option would damage the charcoal beds which would require the charcoal to be removed and replaced. This testing would require the control room HVAC system to be declared inoperable. The second option is not possible because the plant must be shut down if the shutdown service water header is drained. Illinois Power Company will perform the required tests during refueling outages.

3.11.1.2.2 Evaluation--These valves isolate the shutdown service water supply to the standby gas treatment charcoal beds and exercising them open any time that the shutdown service water system is in operation would

flood the charcoal beds. Flooding the charcoal beds renders the control room HVAC system inoperable and damages the charcoal which must then be removed and replaced. To exercise these valves quarterly during power operations without flooding the charcoal beds would require stopping shutdown service water flow and draining the header. It would be impractical to remove the shutdown service water system from service quarterly during power operations because the system provides cooling water flow to many safety related components which are required to remain in service during power operations.

During cold shutdowns, the shutdown service water system provides cooling water flow to the residual heat removal heat exchangers which are necessary for shutdown cooling operation to remove reactor decay heat. If the charcoal beds are flooded to perform valve testing, the licensee indicated that it would take two to three weeks and considerable expense to replace them. It would be burdensome to require the licensee to replace the charcoal beds during cold shutdowns because of the time and expense involved. Further, performing this testing could delay the restart from cold shutdowns.

The licensee's proposal to exercise and measure the stroke times for these valves during refueling outages should provide a reasonable assurance of valve operational readiness.

Based on the impracticality of exercising these valves quarterly during power operations or during cold shutdowns, the burden on the licensee if the Code requirements were imposed, and considering the licensee's proposed testing, relief should be granted as requested from the test frequency requirements of IWV-3410 for these valves.

3.11.2 Category C Valves

3.11.2.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for the following check valves in the shutdown service water lines to the standby gas treatment charcoal beds, the makeup air filter package, and the supply air filter package, and proposed to exercise these valves during refueling outages.

1SX072A	1SX075A	1SX106A
1SX072B	1SX075B	1SX106B

3.11.2.1.1 Licensee's Basis for Requesting Relief--Testing these valves will flood the charcoal beds of the control room HVAC system. This would cause these trains to become inoperable and would require replacement of the charcoal. In order to avoid flooding the charcoal beds or removal of the charcoal, the shutdown service water system main header would be required to be drained and declared inoperable. The shutdown service water system provides cooling water to ECCS systems and various other systems required to be operable in all modes of operation.

Both of the above options are not possible during cold shutdown testing. The first option would damage the charcoal beds which would require the charcoal to be removed and replaced. This testing would require the control room HVAC system to be declared inoperable. The second option is not possible because the plant must be shut down if the shutdown service water header is drained.

Illinois Power Company will perform the required tests during refueling outages.

3.11.2.1.2 Evaluation--IWV-3522 specifies the exercising requirements for check valves and IWV-3521 identifies the exercising frequency of at least once every 3 months, if practical, or during cold shutdowns. These check valves are normally closed and are required to open to allow shutdown service water flow to the standby gas treatment charcoal beds and to exercise them open with flow would result in shutdown service water flow into the charcoal beds. Flooding the charcoal beds renders the control room HVAC system inoperable and damages the charcoal which must then be removed and replaced, therefore, it is impractical to establish shutdown service water flow through these valves quarterly during power operations. Flooding the charcoal beds to perform valve testing during cold shutdowns is not practical because removal and replacement of the charcoal would take two to three weeks which could delay startup of the plant.

The licensee has proposed a refueling outage frequency for full-stroke exercising these check valves, which should provide a reasonable assurance of valve operational readiness. However, they have not explain how these check valves will be full-stroke exercised. Establishing maximum accident condition flow through these check valves to full-stroke exercise them open could result in flooding the charcoal beds even if performed during refueling outages. The flooded charcoal would have to be replaced, which would result in a great expenditure of money and manpower. The licensee has not identified any alternate methods of verifying a full-stroke exercise of these check valves such as disassembly, inspection, and manual exercise of the valve disks. Therefore, the licensee should full-stroke exercise these valves in accordance with Generic Letter 89-04, Attachment 1, Item 1.

Based on the impracticality of exercising these valves quarterly during power operations or during cold shutdowns, the burden on the licensee if the Code requirements were imposed, and considering the licensee's proposed testing interval of every refueling outage, relief should be granted as requested from the exercising frequency requirements of IWV-3520 for these valves.

3.12 Diesel Generator Support Systems

3.12.1 Category B Valves

3.12.1.1 Relief Request. The licensee has requested relief from the stroke time measurement requirements of Section XI, Paragraph IWV-3413, for 1DG008A through 1DG008K, the diesel generator air start valves, and proposed to exercise these valves at least once quarterly during the performance of the diesel generator Technical Specification testing, but valve stroke times will not be measured during this testing.

3.12.1.1.1 Licensee's Basis for Requesting Relief--These valves are totally enclosed valves with no positive means of determining valve position. Technical Specification 4.8.1.1.2 requires each DG to be tested at least every 31 days. These tests are designed to test the DG as a unit, not each component of the skid.

No stroke timing of the air start valves will be performed. To satisfy the exercise test of these valves, the air gage upstream of each valve will be monitored to verify the pressure decrease in the line which assures the valve has opened. This test will be performed on a three month frequency.

3.12.1.1.2 Evaluation--IWV-3411 requires Category B valves to be exercised and IWV-3413 requires that their full-stroke times be measured when they are exercised. These air start valves are normally closed and are required to open to admit starting air to the diesel start motors. Stroke times cannot be measured for these valves since they do not have any position indication and are totally enclosed so that the valve stems cannot be observed without disassembling the valves. The licensee proposed to exercise these valves at least once every three months during the diesel generator testing and to verify that each valve opens by observing a decrease in pressure of the respective air receivers. A decrease in receiver pressure would indicate that air flowed through the valve into the diesel start motor, however, the licensee has not provided any acceptance criteria for this test to ensure that each of the redundant air start valves is operating properly to admit starting air to the diesels. Further, the licensee's proposal does not provide any method to monitor or detect degradation of these valves.

In order to obtain meaningful stroke times for these valves it would be necessary to replace them with valves having position indication or to develop some other means of determining valve position. It would be burdensome to require the licensee to replace these valves since it would be costly. However, the licensee's proposal provides no means of detecting valve degradation. Some means should be developed to monitor valve condition and detect degradation.

Even if these valves are not replaced with ones having position indication, it may be possible for the licensee to develop a method of measuring stroke times, such as using non-intrusive diagnostic techniques. If stroke times determined by such an alternate method are not sufficiently repeatable to permit trending, the licensee could classify these valves as rapid-acting valves or, if that isn't practical, establish an appropriate maximum stroke time limit using the guidelines of Generic Letter 89-04,

Attachment 1, Position 5, and verify that stroke times remain under this limit. It would be burdensome to require the licensee to immediately develop a means of monitoring for valve degradation, therefore, an interim period should be provided for the licensee to develop a method of performing this testing. The licensee's proposal of verifying valve operational readiness by quarterly exercising should provide an acceptable level of quality and safety during the interim period.

Based on the impracticality of measuring valve full-stroke times, the burden on the licensee if the Code requirements are imposed, and considering the licensee's proposed alternate testing, interim relief may be granted for 12 months or until the end of the next refueling outage, whichever is longer. During this interim period the licensee should develop a method of adequately monitoring for degradation of these valves.

3.13 Containment Monitoring System

3.13.1 Category A/C Valves

3.13.1.1 Relief Request. The licensee has requested relief from the exercising frequency requirements of Section XI, Paragraph IWV-3520, for 1CM002B, 1E22-F332, 1E51-F377B, 1SM008, and 1SM011, excess flow check valves on containment monitoring lines from the suppression pool, and proposed to exercise these valves during refueling outages.

3.13.1.1.1 Licensee's Basis for Requesting Relief--These valves cannot be tested every three months because they are 8 feet below the normal suppression pool level. To perform these tests during cold shutdowns would require the pool level to be lowered by 8 feet to gain access for installing test connections. Lowering 8 feet of water in the suppression pool (which is approximately equivalent to 62,000 ft^3 or 460,000 gallons) and processing the radioactive waste would delay the plant startup and generate more radwaste. Illinois Power Company will exercise these valves during refueling outages.

3.13.1.1. Evaluation--IWV-3522 specifies the exercising requirements for check valves IWV-3521 identifies the exercising frequency of at least once eve 3 months, if practical, or during cold shutdowns. These excess flow check valves are normally open and are required to close to restrict flow if there is excessive flow through the valve. A special test must be performed to verify that these valves operate to restrict flow and access is required to install test connections in order to perform this test. These valves are located below the normal suppression pool level which makes them inaccessible for testing, therefore, it is impractical to exercise these valves quarterly during power operations. The suppression pool level would have to be lowered by eight feet to permit valve testing. Lowering the suppression pool level during cold shutdowns would generate a large quantity of radioactive waste and would take sufficient time that it could delay startup, therefore, it is impractical to exercise these valves during cold shutdowns.

The licensee's proposal to exercise these excess flow check valves during refueling outages when the suppression pool level can be drained down, should provide a reasonable assurance of valve operational readiness.

Based on the impracticality of exercising these valves quarterly during power operations or during cold shutdowns, the burden on the licensee if the Code requirements were imposed, and considering the licensee's proposed testing, relief should be granted as requested from the exercising frequency requirements of IWV-3520 for these valves.

APPENDIX A

IST PROGRAM ANOMALIES IDENTIFIED IN THE REVIEW

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IST PROGRAM ANOMALIES IDENTIFIED IN THE REVIEW

Inconsistencies and omissions in the licensee's program noted during the course of this review are summarized below. The licensee should resolve these items in accordance with the evaluations, conclusions, and guidelines presented in this report.

1. In Relief Request No. 3006 the licensee requested general relief from the Code specified allowable ranges for pump flow rate and differential pressure. General relief from the allowable range limit requirements of Table IWP-3100-2 should not be granted. Relief may be granted from the Code allowable range requirements for specific pumps in the IST program where the licensee demonstrates the impracticality of complying with the Code limits. However, the proposed general relaxation of the Code limits has not been justified and should not be granted (refer to the discussion in Section 2.1.2.1 of this report).

2. In Relief Request No. 3002 the licensee proposed to calculate the flow rate for the diesel generator fuel oil transfer pumps and requested relief from the Code specified allowable ranges for pump flow rate. Section XI testing is conducted to detect degraded components and repair them when their ability to perform their safety function becomes questionable. The licensee's proposed allowable ranges are not acceptable because they can allow substantial pump degradation without taking corrective action, therefore, relief should not be granted as requested (refer to Section 2.3.1.1).

   If pump flow rates can be calculated with adequate accuracy and repeatability to allow the licensee to use the calculated flow rates in conjunction with the pump differential pressure measurements to monitor pump hydraulic condition and degradation, then the licensee may use this method of testing. However, if the accuracy and repeatability of the calculated flow rates are not adequate to allow a meaningful evaluation of pump hydraulic condition, then the licensee should install instrumentation that meets the requirements of IWP-4110 and 4120.

3. The licensee has requested relief from testing safety related pumps or valves when the redundant subsystem is out of service for maintenance or repairs, and to perform the required testing within 7 days after the out of service subsystem is returned to service. The licensee has not adequately demonstrated the impracticality of complying with the Code specified testing frequencies, nor have they shown that doing so would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted as requested. There might be particular cases where the LCO Action Statement would not provide sufficient time for component testing when a redundant train or subsystem is out of service. The licensee should submit specific requests for relief for the affected components in these systems. (Refer to Section 3.1.2.1)

4. Relief Request No. 2011 requests relief from the Code requirement to individually leak rate test certain containment isolation valves and proposed to leak rate test these inboard and outboard valves in pairs. Section XI is a component test Code to monitor individual component condition and degradation to access their operational readiness, therefore, these valves should be individually leak rate tested where practicable. When individual leak rate testing is impractical because of the lack of necessary test taps and/or isolation valves, testing in groups is acceptable provided the group leakage limits are conservatively set such that excessive leakage through any individual valve in the group can be detected and the appropriate corrective actions taken (see Section 3.1.3.1).

5. Relief Request No. 2021 requests relief from the Code requirement to perform post maintenance testing for valves that undergo maintenance which could affect valve performance. The licensee proposed to defer testing of valves which cannot be tested during power operations if the maintenance performed is only stem packing adjustment within limits specified by the valve manufacturers. Improper adjustment of valve stem packing could affect valve operability and render it incapable of changing position to perform its function. Industry experience has also demonstrated that this could be a common mode failure mechanism which

could disable more than one train of a safety system (see Section 3.1.4.1).

Due to the sensitive nature of this maintenance work and the possibility of common mode failure, relief may be granted from the Code requirements provided that the licensee complies with the following guidelines for stem packing adjustments.

a. The maintenance must be performed using pre-approved maintenance procedures (established procedures that have been approved by plant engineering and management) which clearly outline the steps to be taken and the torque limits for the packing gland nuts for each specific valve or group of similar valves.

b. The packing gland adjustment nut torque limits are specified by the valve manufacturer for the specific valve configuration being used (i.e., same packing material, same system working fluid , same actuating air or hydraulic pressure).

c. No modifications have been performed on the valves that could affect their full-stroke times since the valve manufacturer supplied the valve packing torque limits.

d. When packing adjustments are performed on a valve following the proposed alternate testing of this relief request, this maintenance may not be performed on any valves in a redundant train of the same safety system or in another safety system that serves as a backup for the first system, unless the licensee has verified by previous testing that the specified torque limits are valid and should not affect valve operability.

e. All valves that undergo packing adjustments whose post maintenance testing is deferred by this relief request must be tested the first time the plant enters an operating mode which permits valve testing.

f. If failure of a valve is detected by the post maintenance testing, a root cause analysis should be performed to determine if the failure was caused or affected by the packing adjustment. If it is determined that the packing adjustment caused the valve failure, the maintenance procedure must be reevaluated and modified.

g. If the packing of a valve is adjusted more than once during an operating cycle, the second and subsequent adjustments must be followed by the Code specified post maintenance testing.

6. Relief Request No. 2027 requests relief from the Code requirement to perform Section XI leak rate tests on the drywell isolation valves and proposes to test all of these valves together by performing a drywell bypass leakage test. The licensee's proposed alternate testing does not provide information that assures that these valves are individually capable of performing their Category A leak tight closure function, therefore, long term relief should not be granted as requested. Interim relief should be granted for one year or until the end of the next refueling outage, whichever is longer, to permit the licensee time to develop procedures to individually leak rate test these valves in accordance with the requirements of IWV-3426 and -3427(a) (refer to Section 3.1.6.1 of this report).

7. The licensee has requested relief from the leak rate testing requirements of the Code for the excess flow check valves and proposed to verify that their leakage is not excessive by performing an Integrated Leak Rate Test (ILRT) once every 40 months. This testing should verify that there is not inordinate leakage through these valves and should be an acceptable alternative to the Code since these valves are not designed to be leak tight. However, this testing does not verify that each valve is capable of actuating to restrict flow when the differential pressure across it reaches a specified point. Therefore, relief should be granted provided the licensee also demonstrates that each excess flow check actuates to restrict flow when subjected to the set differential pressure (refer to Section 3.1.7.1).

8. The licensee has requested relief from the exercising frequency requirements of the Code for the water-leg keep-fill check valves and proposed to verify valve closure by disassembly and inspection on a sampling basis during refueling outages. The Minutes of the Public Meeting on Generic Letter 89-04 state that the use of disassembly to verify closure capability may be found to be acceptable depending on whether verification by flow or pressure measurements is practical. The licensee stated that the check valves in series with these valves could be manually opened to complete the required tests but that it would be undesirable. The licensee has not adequately demonstrated the impracticality of performing this testing, therefore, long term relief should not be granted from the Code required test method or frequency.

   Requiring the licensee to immediately develop and implement procedures to test these valves in accordance with the Code requirements would be burdensome. An interim period of one year or until the end of the next refueling outage, whichever is longer, should be allowed to permit development of the necessary procedures to perform this testing. While disassembly and inspection is not acceptable when testing is practical, it yields a great deal of information about valve condition and as such should provide reasonable assurance of valve operational readiness during the interim period (refer to Section 3.1.8.1).

9. The licensee has requested relief from the exercising frequency and stroke time measurement requirements of the Code for the main steam ADS valves and proposed to exercise these valves during refueling outages but not to measure stroke times. Relief should be granted from the exercising frequency requirements, however, the licensee's proposed testing provides no means to monitor for valve degradation. It is not acceptable to have no means to detect degradation of these valves to permit timely repairs prior to the valves failing to perform their safety function, therefore, the licensee should establish test conditions that are repeatable in order to yield meaningful information that could be used to monitor ADS valve condition. The licensee should also develop acceptance criteria that will result in timely valve maintenance (refer to Section 3.2.1.1).

10. The licensee has requested relief from the safety relief valve (SRV) test method requirements of the Code for the main steam safety relief valves and proposed to replace 8 of the 16 valves each refueling outage with valves that have been refurbished. This testing method should provide an acceptable level of quality and safety, therefore, relief should be granted provided that as-found test data is taken and recorded for the valves that are removed for testing and refurbishment. The licensee also requested relief from the corrective action requirements of IWV-3513 for the SRVs and proposed to replace a greater number of valves than required by the Code, but not to test additional valves based on the failure rate of the tested valves. The proposal to not require additional testing based on failure rates is not conservative and does not appear to be warranted considering the high failure rate that Clinton Power Station experienced with these SRVs during RF-1 (7 out of 16 valves failed their setpoint test) and considering the high failure rates of similar valves in the nuclear industry. Relief should not be granted from the requirements of IWV-3513 (refer to Section 3.2.2.1).

11. The licensee's bases for relief were judged to contain inadequate technical justifications to grant relief from the Section XI exercising frequency requirements for the following valves. It is impractical to exercise these valves quarterly during power operations, however, they should be full-stroke exercised during cold shutdowns.

System	Valves	Relief Request	Relief Request Evaluation
RHR	1E12-F041A	2014	3.4.1.1
	1E12-F041B	2014	3.4.1.1
	1E12-F041C	2014	3.4.1.1
LPCS	1E21-F006	2014	3.5.1.1
HPCS	1E22-F005	2014	3.6.1.1

12. In Relief Request No. 2029 the licensee proposed to verify closure of the check valves in the air lines to valve operator accumulators by performing a pressure drop test of each accumulator. This relief

request is discussed in Section 3.3.1.2 where it was concluded that relief should be granted provided that the licensee specifically identifies acceptance criteria for these pressure drop tests in the IST program and the test procedures.

13. The licensee has requested relief from the exercising frequency requirements of the Code for closure of valves 1E12-F050A and F050B and proposed to exercise these valves closed once every two years in conjunction with the Code required leak rate test. The licensee has not demonstrated the impracticality of exercising these valves closed at the Code specified frequency nor have they shown that performing the Code testing would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted as requested (refer to Section 3.4.1.3).

14. Relief Request No. 2007 requests relief from the stroke time measurement requirements of Section XI for 1E12-F095 and proposes to exercise this valve quarterly but not measure its full-stroke time. The licensee has not proposed an alternate test to monitor for degradation of this valve. It is unacceptable to not monitor for valve degradation on a long term basis, therefore, interim relief should be granted for 12 months or until the end of the next refueling outage, whichever is longer. During this interim period the licensee should develop an adequate means of monitoring for valve degradation (refer to Section 3.4.2.1).

15. In Relief Request No. 2020 the licensee requested relief from full-stroke exercising testable check valve 1E51-F066 and proposed a partial-stroke exercise of this valve during cold shutdowns. The licensee's proposed alternate testing of establishing 400 to 500 gpm through this check valve utilizing shutdown cooling flow during cold shutdowns is not a full-stroke because it is less than the maximum required accident flow rate of 600 gpm. Not verifying the full-stroke capability of this valve during periodic valve testing does not provide an acceptable level of quality and safety, therefore, long term relief should not be granted as requested. It would be burdensome to require

the licensee to immediately develop a means of full-stroke exercising this valve, therefore, an interim period should be provided for the licensee to develop a method of performing this testing. Interim relief may be granted for 12 months or until the end of the next refueling outage, whichever is longer. During this interim period the licensee should develop a method of full-stroke exercising this valve during cold shutdowns (see Section 3.7.1.1).

16. The licensee has requested relief from the exercising frequency requirements of Section XI for closure of valve 1E51-F040 and proposed to exercise this valve closed once every two years in conjunction with the Code required leak rate test. The licensee has not demonstrated the impracticality of exercising valve 1E51-F040 closed at the Code specified frequency nor have they shown that performing the Code testing would be a hardship without a compensating increase in the level of quality and safety, therefore, relief should not be granted as requested (see Section 3.7.1.2).

17. In Relief Request No. 2030 the licensee requested relief from the exercising frequency requirements of Section XI for closure of valve 1C41-F006 and proposed to exercise this valve closed once every two years in conjunction with the Code required leak rate test. The licensee has indicated in their IST program that this valve is full-stroke exercised open during cold shutdowns and there is no apparent reason that it cannot be verified closed at that frequency. Therefore, the licensee should verify valve closure during cold shutdowns. Requiring the immediate development and implementation of the necessary procedures to test this valve during cold shutdowns would impose an unreasonable burden on the licensee. Interim relief should be granted for a period of one year or until the end of the next refueling outage, whichever is longer, after which time the licensee should verify closure of this valve during cold shutdowns (see Section 3.8.1.2).

18. The licensee has not provided an adequate justification in Relief Request No. 2017 for not exercising the reactor water cleanup system isolation valves during cold shutdowns. It is agreed that it is not

desirable to allow the quality of the reactor coolant to degrade excessively. However, the licensee has not demonstrated that testing these valves during cold shutdowns would result in the cleanup system being off-line long enough to degrade reactor water quality sufficiently to make this testing impractical or excessively burdensome. On this basis relief should not be granted as requested and these valves should be exercised during cold shutdowns as required (see Section 3.10.1.1).

19. The licensee proposed in Relief Request No. 2026 to verify that the diesel generator air start valves are exercised by observing a decrease in air receiver pressure. A decrease in receiver pressure would indicate that air flowed through the valve into the diesel start motor, however, the licensee has not provided any acceptance criteria for this test to ensure that each of the redundant air start valves is operating properly to admit starting air to the diesels. The licensee's proposal to exercise these valves at least once every three months but not measure valve stroke times does not provide any method to monitor or detect degradation. Some means should be developed to monitor valve condition and detect degradation. It would be burdensome to require the licensee to immediately develop a means of monitoring for valve degradation, therefore, an interim period should be permitted to develop a testing method. Interim relief may be granted for 12 months or until the end of the next refueling outage, whichever is longer (see Section 3.12.1.1).

20. The justification provided in Relief Request No. 2024 does not specifically apply to the HCU No. 114 valves since they are Category C check valves which are not required to have their stroke times measured. A more specific technical justification should be provided for these valves (see Section 3.9.3.1).

21. The test frequency interval extensions requested in Relief Request No. 1001 should not apply to safety and relief valves which are tested once every five years in accordance with the schedule established by Table IWV-3510-1. This test schedule covers a long time period and already has some built in scheduling flexibility, therefore, the proposed extension should not be necessary (see Section 3.1.5.1).

APPENDIX B

P&ID LIST

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P&ID LIST

The following is a list of P&IDs used during the review of the Clinton Power Station Unit 1 IST program:

System	P&ID No.	Revision
Nuclear Boiler	M05-1071 Sh. 1	N
Nuclear Boiler	M05-1071 Sh. 2	K
Reactor Feedwater	M05-1004	H
Reactor Feedwater	M10-1004 Sh. 1	C
Reactor Feedwater	M10-1004 Sh. 8	C
Main Steam	M05-1002 Sh. 1	H
Main Steam	M05-1002 Sh. 2	F
Main Steam	M05-1002 Sh. 5	E
Main Steam	M10-1002 Sh. 1	K
Main Steam	M10-1002 Sh. 2	G
Reactor Recirculation	M05-1072 Sh. 1	L
Reactor Recirculation	M05-1072 Sh. 2	L
Component Cooling Water	M05-1032 Sh. 2	L
Component Cooling Water	M05-1032 Sh. 3	L
Containment Monitoring	M05-1034 Sh. 1	L
Containment Monitoring	M05-1034 Sh. 2	E
Containment Monitoring	M05-1034 Sh. 3	D
Cycled Condensate	M05-1012 Sh. 6	M
Control Rod Drive	CLN-001 Sh. 1	11
Control Rod Drive	CLN-001 Sh. 2	11
Control Rod Drive	M05-1078 Sh. 1	H
Standby Liquid Control	M05-1077	R
Diesel Generator Auxiliary Systems	M05-1035 Sh. 1	N
Diesel Generator Auxiliary Systems	M05-1035 Sh. 2	M
Diesel Generator Auxiliary Systems	M05-1035 Sh. 3	M
Diesel Generator Fuel Oil	M05-1036 Sh. 1	L
Diesel Generator Fuel Oil	M05-1036 Sh. 2	N
Residual Heat Removal	M05-1075 Sh. 1	Z
Residual Heat Removal	M05-1075 Sh. 2	Y

System	P&ID No.	Revision
Residual Heat Removal	M05-1075 Sh. 3	P
Residual Heat Removal	M05-1075 Sh. 4	S
Shutdown Service Water	M05-1052 Sh. 1	U
Shutdown Service Water	M05-1052 Sh. 2	R
Shutdown Service Water	M05-1052 Sh. 3	R
Shutdown Service Water	M05-1052 Sh. 4	M
Shutdown Service Water	M05-1052 Sh. 5	M
Low Pressure Core Spray	M05-1073	S
High Pressure Core Spray	M05-1074 Sh. 1	R
High Pressure Core Spray	M05-1074 Sh. 3	G
High Pressure Core Spray	M10-9074 Sh. 3	A
Leak Detection	M05-1041 Sh. 4	C
MSIV Leakage Control	M05-1070	R
Reactor Core Isolation Cooling	M05-1079 Sh. 1	N
Reactor Core Isolation Cooling	M05-1079 Sh. 2	P
Reactor Core Isolation Cooling	M10-1079 Sh. 2	M
Fuel Pool Cooling & Clean-up	M05-1037 Sh. 1	L
Fuel Pool Cooling & Clean-up	M05-1037 Sh. 2	R
Fuel Pool Cooling & Clean-up	M05-1037 Sh. 3	M
Fire Protection-Containment & Aux.	M05-1039 Sh. 9	N
Reactor Water Clean-up	M05-1076 Sh. 4	P
Combustible Gas Control	M05-1063	G
Instrument Air-Containment	M05-1040 Sh. 5	H
Instrument Air-Fuel, Aux., & Cont.	M05-1040 Sh. 7	N
Makeup Condensate Storage	M05-1042 Sh. 4	K
Post Accident Sampling & Analysis	M05-1045 Sh. 12	G
Breathing Air-Containment	M05-1065 Sh. 7	G
Control Room Emergency Air	M05-1065 Sh. 8	J
Containment Bldg. Equipment Drain	M05-1046 Sh. 3	E
Drywell Equipment Drain	M05-1046 Sh. 4	H
Containment Bldg. Floor Drain	M05-1047 Sh. 3	F
Service Air-Containment Bldg.	M05-1048 Sh. 6	N
Suppression Pool Clean-up & Transfer	M05-1060	G
Suppression Pool Makeup	M05-1069	L

System	P&ID No.	Revision
Control Room HVAC	M05-1102 Sh. 1	N
Control Room HVAC Chilled Water	M05-1102 Sh. 5	F
Control Room HVAC Chilled Water	M05-1102 Sh. 6	T
Standby Gas Treatment	M10-1105 Sh. 10	L
Drywell Chilled Water	M05-1109 Sh. 2	B
Drywell Chilled Water	M05-1109 Sh. 3	B
Drywell Purge	M05-1110 Sh. 2	H
Containment Bldg. HVAC	M05-1111 Sh. 1	H
Containment Bldg. HVAC	M05-1111 Sh. 5	F
Containment Bldg. Purge	M05-1111 Sh. 19	E
Plant Chilled Water-Containment	M05-1117 Sh. 19	L
Plant Chilled Water-Drywell	M05-1117 Sh. 26	D
Radwaste Sludge Process Phase Sep.	M05-1089 Sh. 2	J