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ComEd

April 20, 1999

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Request for Inservice Testing Program Relief Regarding Establishment of New Reference Values for Pump Vibration

10 CFR 50.55a(f), "Inservice Testing Requirements," requires inservice testing (IST) of certain American Society of Mechanical Engineers (ASME), Boiler & Pressure Vessel (B&PV) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Pursuant to 10 CFR 50.55a(a)(3)(ii), we are proposing an alternative to the requirements

A047

of 10 CFR 50.55a(f) regarding the establishment of new reference values for pump vibration for the Byron Station, Braidwood Station, Dresden Nuclear Power Station, LaSalle County Station, and Quad Cities Nuclear Power Station IST Programs.

In accordance with 10 CFR 50.55a(f)(iii), the attached IST Program relief requests propose to implement ASME Operations and Maintenance (OM) Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST programs. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency or repairing the pump. Conformance with the current ASME Code provisions results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the analysis that would be called for in the proposed alternative provides reasonable assurance of the operational readiness of the pumps.

We request approval of this proposed alternative by October 15, 1999. Should you have any questions concerning this letter, please contact Mr. J. A. Bauer at (630) 663-7287.

Respectfully,

R. M. Krich
Vice President - Regulatory Services

Attachments: A - Braidwood Station Relief Request PR-1
B - Byron Station Relief Request PR-02
C - Dresden Nuclear Power Station Relief Request RP-00C
D - LaSalle County Station Relief Request RP-04
E - Quad Cities Nuclear Power Station Relief Request RP-00A

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station
NRC Senior Resident Inspector - Byron Station
NRC Senior Resident Inspector - Dresden Nuclear Power Station
NRC Senior Resident Inspector - LaSalle County Station
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station

Attachment A

Braidwood Station Relief Request PR-1

Relief Request PR-1

TITLE: Establishing new reference values when in Alert and Required Action Ranges

PUMP NUMBER	CODE CLASS	DESCRIPTION
1/2AF01PA	3	Auxiliary Feedwater Pump
1/2AF01PB	3	Auxiliary Feedwater Pump
0CC01P	3	Component Cooling Pump
1/2CC01PA	3	Component Cooling Pump
1/2CC01PB	3	Component Cooling Pump
1/2CS01PA	2	Containment Spray Pump
1/2CS01PB	2	Containment Spray Pump
1/2CV01PA	2	Centrifugal Charging Pump
1/2CV01PB	2	Centrifugal Charging Pump
1/2DO01PA	G	Diesel Oil Transfer Pump
1/2DO01PB	G	Diesel Oil Transfer Pump
1/2DO01PC	G	Diesel Oil Transfer Pump
1/2DO01PD	G	Diesel Oil Transfer Pump
1/2RH01PA	2	Residual Heat Removal Pump
1/2RH01PB	2	Residual Heat Removal Pump
1/2SI01PA	2	Safety Injection Pump
1/2SI01PB	2	Safety Injection Pump
1/2SX01PA	3	Essential Service Water Pump
1/2SX01PB	3	Essential Service Water Pump
1/2SX04P	3	1B Aux Feed Service Water Booster Pump
0WO01PA	3	Control Room Chilled Water Pump
0WO01PB	3	Control Room Chilled Water Pump

CODE REQUIREMENTS:

In accordance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, "Analysis and Evaluation," if deviations fall within the alert range of Table 3a, "Ranges for Test Parameters," for pump vibration, the frequency of pump testing specified in paragraph 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If the deviations fall within the required action range of Table 3a for vibration, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected.

BASIS FOR RELIEF:

10 CFR 50.55a requires inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC, as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," which is not currently referenced in 10 CFR 50.55a, allows that in cases where the pump's test parameters are either within the alert or required action ranges of Table ISTB 5.2.1-1, Table ISTB 5.2.1-2, Table ISTB 5.2.2-1 or Table ISTB 5.2.3-1, and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. This paragraph also states that the analysis shall include both a pump level and a system level verification of pump operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data.

It is an unnecessary hardship to replace or repair a pump that is still operating within component and system acceptable parameters as determined through analysis. The repair or replacement involves rendering the associated subsystem inoperable and unavailable. Replacement or repair of a pump, in this condition, unnecessarily increases the unavailability of the pump and its associated subsystem and is not consistent with availability goals established in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." To provide reasonable assurance of a pump's operational readiness in this condition, the analysis will include system requirements, pump hydraulic data, comparison of the current vibration spectrum with the baseline vibration spectrum, an evaluation of the trend of available overall vibration amplitudes and spectra, comparison with like pumps used in similar applications,

and the determination of the need for corrective action. The analysis will also provide reasonable assurance that the degradation mechanism will not cause further degradation such that, before the next pump test or before repairs can be performed, the pump would fail.

Compliance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the proposed analysis provides reasonable assurance of the operational readiness of the pumps and is consistent with the allowance, in paragraph 4.6 of OM-6, to establish new reference values after an analysis is performed.

PROPOSED ALTERNATIVE TEST:

ComEd proposes to implement ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST program. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency. The proposed analysis shall include verification of the pump's operational readiness, both a pump level and a system level analysis of operational readiness including the ability of the pump to meet design limits, the cause of the change in pump performance, vibration spectrum analysis including a comparison of current vibration spectrum with baseline vibration spectrum, and an analysis of all recent available trend data including overall vibration amplitude and spectra. The proposed analysis of the pump's operational readiness shall also take into consideration the accident mitigation function of the affected pump, including post-accident environmental conditions and the time period the pump is required to operate to fulfill its accident mitigation function. The vibration data will be compared with like pumps and similar applications to ensure pump performance is bounded by vibration performance of pumps that are not operating in the alert or required action range. The new reference value will not exceed the highest existing reference values for like pumps in similar applications.

If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will be placed on double test frequency until the condition is corrected. The analysis shall also include a determination of the need for corrective action. The results of the analysis will be documented in the record of tests.

As long as pump performance vibration remains within the range of acceptable performance defined by satisfactorily operating like pumps in similar applications, no limits are placed on the number of times that reference values may be adjusted by analysis. This is considered to be acceptable since precision balanced, smooth running pumps may have

vibration levels that are orders of magnitude better than satisfactorily performing like pumps in similar applications. The restriction on setting new reference values above existing reference values for like pumps in similar applications will preclude raising reference values to unacceptable levels, thereby preventing continual adjustment of the reference values. As a result, assurance will be provided that the design basis function of the pumps will be maintained.

APPROVAL STATUS:

Submitted as a Revision 0a to the Revision 0 of the Braidwood 2nd interval Program.

Attachment B

Byron Station Relief Request PR-02

Relief Request - PR-02
(Rev. 0)

Affected Components

EPN	Class	Description
1(2)AF01PA(B)	3	Auxiliary Feedwater Pump
0CC01P, 1(2)CC01PA(B)	3	Component Cooling Pump
1(2)CS01PA(B)	2	Containment Spray Pump
1(2)CV01PA(B)	2	Centrifugal Charging Pump
1(2)DO01PA(B)(C)(D)	3	Diesel Oil Transfer Pump
1(2)RH01PA(B)	2	Residual Heat Removal Pump
1(2)SI01PA(B)	2	Safety Injection Pump
0SX02PA(B)	3	Essential Service Water Makeup Pump
1(2)SX01PA(B)	3	Essential Service Water Pump
1(2)SX04P	3	1(2) AFW SX Booster Pump
0WO01PA(B)	3	Control Room Chilled Water Pump

Test Requirement

In accordance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, "Analysis and Evaluation," if deviations fall within the alert range of Table 3a, "Ranges for Test Parameters," for pump vibration, the frequency of pump testing specified in paragraph 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If the deviations fall within the required action range of Table 3a for vibration, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected.

Basis for Relief

10 CFR 50.55a requires inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC, as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," which is not currently referenced in 10 CFR 50.55a, allows that in cases where the pump's test parameters are either within the alert or required action ranges of Table ISTB 5.2.1-1, Table ISTB 5.2.1-2, Table ISTB 5.2.2-1 or Table ISTB 5.2.3-1, and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. This paragraph also states that the analysis shall include both a pump level and a system level verification of pump operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data.

It is an unnecessary hardship to replace or repair a pump that is still operating within component and system acceptable parameters as determined through analysis. The repair or replacement involves rendering the associated subsystem inoperable and unavailable. Replacement or repair of a pump, in this condition, unnecessarily increases the unavailability of the pump and its associated subsystem and is not consistent with availability goals established in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." To provide reasonable assurance of a pump's operational readiness in this condition, the analysis will include system requirements, pump hydraulic data, comparison of the current vibration spectrum with the baseline vibration spectrum, an evaluation of the trend of available overall vibration amplitudes and spectra, comparison with like pumps used in similar applications, and the determination of the need for corrective action. The analysis will also provide reasonable assurance that the degradation mechanism will not cause further degradation such that, before the next pump test or before repairs can be performed, the pump would fail.

Compliance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the proposed analysis provides reasonable assurance of the operational readiness of the pumps and is consistent with the allowance, in paragraph 4.6 of OM-6, to establish new reference values after an analysis is performed.

Alternative Test

ComEd proposes to implement ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST program. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency. The proposed analysis shall include verification of the pump's operational readiness, both a pump level and a system level analysis of operational readiness including the ability of the pump to meet design limits, the cause of the change in pump performance,

vibration spectrum analysis including a comparison of current vibration spectrum with baseline vibration spectrum, and an analysis of all recent available trend data including overall vibration amplitude and spectra. The proposed analysis of the pump's operational readiness shall also take into consideration the accident mitigation function of the affected pump, including post-accident environmental conditions and time period the pump is required to operate to fulfill its accident mitigation function. The vibration data will be compared with like pumps and similar applications to ensure pump performance is bounded by vibration performance of pumps that are not operating in the alert or required action range. The new reference value will not exceed the highest existing reference values for like pumps in similar applications.

If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will be placed on double test frequency until the condition is corrected. The analysis shall also include a determination of the need for corrective action. The results of the analysis will be documented in the record of tests.

As long as pump performance vibration remains within the range of acceptable performance defined by satisfactorily operating like pumps in similar applications, no limits are placed on the number of times that reference values may be adjusted by analysis. This is considered to be acceptable since precision balanced, smooth running pumps may have vibration levels that are orders of magnitude better than satisfactorily performing like pumps in similar applications. The restriction on setting new reference values above existing reference values for like pumps in similar applications will preclude raising reference values to unacceptable levels, thereby preventing continual adjustment of the reference values. As a result, assurance will be provided that the design basis function of the pumps will be maintained.

Attachment C

Dresden Nuclear Power Station Relief Request RP-00C

Pump Relief Request - RP-00C
(Page 1 of 3)

Affected Components

EPN	Class	Description
2(3)-1102A & B	2	Standby Liquid Control Pump
2(3)-1401A&B	2	Core Spray Pump
2(3)-1401-4	2	ECCS Keep Fill Pump
2(3)-1501-44A, B, C & D	3	Containment Cooling Service Water Pump
2(3)-1502A, B, C & D	2	Low Pressure Coolant Injection Pump
2(3)-2302	2	High Pressure Coolant Injection Pump
2(3)(2/3)-3903	3	Diesel Generator Cooling Water Pump

Test Requirement

In accordance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, "Analysis and Evaluation," if deviations fall within the alert range of Table 3a, "Ranges for Test Parameters," for pump vibration, the frequency of pump testing specified in paragraph 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If the deviations fall within the required action range of Table 3a for vibration, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected.

Basis for Relief

10 CFR 50.55a requires inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC, as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," which is not currently referenced in 10 CFR 50.55a, allows that in cases where the pump's test parameters are either within the alert or required action ranges of Table ISTB 5.2.1-1, Table ISTB 5.2.1-2, Table ISTB 5.2.2-1 or Table ISTB 5.2.3-1, and the pump's continued

Pump Relief Request - RP-00C
(Page 2 of 3)

use at the changed values is supported by an analysis, a new set of reference values may be established. This paragraph also states that the analysis shall include both a pump level and a system level verification of pump operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data.

It is an unnecessary hardship to replace or repair a pump that is still operating within component and system acceptable parameters as determined through analysis. The repair or replacement involves rendering the associated subsystem inoperable and unavailable. Replacement or repair of a pump, in this condition, unnecessarily increases the unavailability of the pump and its associated subsystem and is not consistent with availability goals established in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." To provide reasonable assurance of a pump's operational readiness in this condition, the analysis will include system requirements, pump hydraulic data, comparison of the current vibration spectrum with the baseline vibration spectrum, an evaluation of the trend of available overall vibration amplitudes and spectra, comparison with like pumps used in similar applications, and the determination of the need for corrective action. The analysis will also provide reasonable assurance that the degradation mechanism will not cause further degradation such that, before the next pump test or before repairs can be performed, the pump would fail.

Compliance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the proposed analysis provides reasonable assurance of the operational readiness of the pumps and is consistent with the allowance, in paragraph 4.6 of OM-6, to establish new reference values after an analysis is performed.

Alternative Test

ComEd proposes to implement ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST program. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency. The proposed analysis shall include verification of the pump's operational readiness, both a pump level and a system level analysis of operational readiness including the ability of the pump to meet design limits, the cause of the change in pump performance, vibration spectrum analysis including a comparison of current vibration spectrum with baseline vibration spectrum, and an analysis of all recent available trend data including overall vibration amplitude and spectra. The proposed analysis of the pump's operational

Pump Relief Request - RP-00C
(Page 3 of 3)

readiness shall also take into consideration the accident mitigation function of the affected pump, including post-accident environmental conditions and the time period the pump is required to operate to fulfill its accident mitigation function. The vibration data will be compared with like pumps and similar applications to ensure pump performance is bounded by vibration performance of pumps that are not operating in the alert or required action range. The new reference value will not exceed the highest existing reference values for like pumps in similar applications.

If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will be placed on double test frequency until the condition is corrected. The analysis shall also include a determination of the need for corrective action. The results of the analysis will be documented in the record of tests.

As long as pump performance vibration remains within the range of acceptable performance defined by satisfactorily operating like pumps in similar applications, no limits are placed on the number of times that reference values may be adjusted by analysis. This is considered to be acceptable since precision balanced, smooth running pumps may have vibration levels that are orders of magnitude better than satisfactorily performing like pumps in similar applications. The restriction on setting new reference values above existing reference values for like pumps in similar applications will preclude raising reference values to unacceptable levels, thereby preventing continual adjustment of the reference values. As a result, assurance will be provided that the design basis function of the pumps will be maintained.

Attachment D

LaSalle County Station Relief Request RP-04

LaSalle County Station
Inservice Testing Plan
Units #1 and #2
Revision 2

Pump Relief Request - RP-04
(Rev. 0)

Affected Components

EPN	Class	Description
0DG01P	3	0 DG Cooling Water Pump
0DO01P	3	0 DG Fuel Transfer Pump
1(2)DG01P	3	1A(2A)DG Cooling Water Pump
1(2)DO01P	3	1A(2A)DG Fuel Transfer Pump
1(2)DO02P	3	1B(2B)DG Fuel Transfer Pump
1(2)FC03PA(B)	3	A(B)Fuel Pool Emergency Makeup Pump
1(2)E22-C001	2	High Pressure Core Spray Pump
1(2)E22-C002	3	1B(2B)DG Cooling Water Pump
1(2)E22-C003	2	HPCS Water Leg Pump
1(2)E21-C001	2	Low Pressure Core Spray Pump
1(2)E21-C002	2	LPCS Water Leg Pump
1(2)E12-C002A(B)(C)	2	A(B)(C)Residual Heat Removal Pump
1(2)E12-C003	2	B/C RHR Water Leg Pump
1(2)E12-C300A(B)(C)(D)	2	A(B)(C)(D)RHR Service Water Pump
1(2)E51-C001	2	Reactor Core Isolation Cooling Pump
1(2)E51-C003	2	RCIC Water Leg Pump
1(2)C41-C001A(B)	2	A(B)Standby Liquid Control Pump

Test Requirement

In accordance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, "Analysis and Evaluation," if deviations fall within the alert range of Table 3a, "Ranges for Test Parameters," for pump vibration, the frequency of pump testing specified in paragraph 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If the deviations fall within the required action range of Table 3a for vibration, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected.

Basis for Relief

10 CFR 50.55a requires inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC, as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," which is not currently referenced in 10 CFR 50.55a, allows that in cases where the pump's test parameters are either within the alert or required action ranges of Table ISTB 5.2.1-1, Table ISTB 5.2.1-2, Table ISTB 5.2.2-1 or Table ISTB 5.2.3-1, and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. This paragraph also states that the analysis shall include both a pump level and a system level verification of pump operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data.

It is an unnecessary hardship to replace or repair a pump that is still operating within component and system acceptable parameters as determined through analysis. The repair or replacement involves rendering the associated subsystem inoperable and unavailable. Replacement or repair of a pump, in this condition, unnecessarily increases the unavailability of the pump and its associated subsystem and is not consistent with availability goals established in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." To provide reasonable assurance of a pump's operational readiness in this condition, the analysis will include system requirements, pump hydraulic data, comparison of the current vibration spectrum with the baseline vibration spectrum, an evaluation of the trend of available overall vibration amplitudes and spectra, comparison with like pumps used in similar applications, and the determination of the need for corrective action. The analysis will also provide reasonable assurance that the degradation mechanism will not cause further degradation such that, before the next pump test or before repairs can be performed, the pump would fail.

Compliance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the proposed analysis provides reasonable assurance of the operational readiness of the pumps and is consistent with the allowance, in paragraph 4.6 of OM-6, to establish new reference values after an analysis is performed.

Alternative Test

ComEd proposes to implement ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST program. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency. The proposed analysis shall include verification of the pump's operational readiness, both a pump level and a system level analysis of operational readiness including the ability of the pump to meet design limits, the cause of the change in pump performance, vibration spectrum analysis including a comparison of current vibration spectrum with baseline vibration spectrum, and an analysis of all recent available trend data including overall vibration amplitude and spectra. The proposed analysis of the pump's operational readiness shall also take into consideration the accident mitigation function of the affected pump, including post-accident environmental conditions and the time period the pump is required to operate to fulfill its accident mitigation function. The vibration data will be compared with like pumps and similar applications to ensure pump performance is bounded by vibration performance of pumps that are not operating in the alert or required action range. The new reference value will not exceed the highest existing reference values for like pumps in similar applications.

If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will be placed on double test frequency until the condition is corrected. The analysis shall also include a determination of the need for corrective action. The results of the analysis will be documented in the record of tests.

As long as pump performance vibration remains within the range of acceptable performance defined by satisfactorily operating like pumps in similar applications, no limits are placed on the number of times that reference values may be adjusted by analysis. This is considered to be acceptable since precision balanced, smooth running pumps may have vibration levels that are orders of magnitude better than satisfactorily performing like pumps in similar applications. The restriction on setting new reference values above existing reference values for like pumps in similar applications will preclude raising reference values to unacceptable levels, thereby preventing continual adjustment of the reference values. As a result, assurance will be provided that the design basis function of the pumps will be maintained.

Attachment E

Quad Cities Nuclear Power Station Relief Request RP-00A

Quad Cities Nuclear Power Station, Units 1 and 2
INSERVICE TESTING PROGRAM

RELIEF REQUEST
NUMBER: RP-00A (Sheet 1 of 4)

Affected Components

EPN	Class	Description
Unit 1/2		
2901	NS	Safe Shutdown Makeup Pump
3903	3	Diesel Generator Cooling Water Pump
5203	NC	Diesel Generator Fuel Oil Transfer Pump
Unit 1		
1001-65A/B/C/D	3	A/B/C/D Residual Heat Removal Service Water Pump
1002A/B/C/D	2	A/B/C/D Residual Heat Removal Pump
1102A/B	2	A/B Standby Liquid Control Pump
1302	NS	Reactor Core Isolation Cooling Pump
1401A/B	2	A/B Core Spray Pump
2302	2	High Pressure Coolant Injection (HPCI) Pump
2304	2	HPCI Turbine Gland Seal Condensate Pump
2308	NC	HPCI Turbine Control Auxiliary Oil Pump
3903	3	Diesel Generator Cooling Water Pump
5203	NC	Diesel Generator Fuel Oil Transfer Pump
Unit 2		
1001-65A/B/C/D	3	A/B/C/D Residual Heat Removal Service Water Pump
1002A/B/C/D	2	A/B/C/D Residual Heat Removal Pump
1102A/B	2	A/B Standby Liquid Control Pump
1302	NS	Reactor Core Isolation Cooling Pump
1401A/B	2	A/B Core Spray Pump
2302	2	HPCI Pump
2304	2	HPCI Turbine Gland Seal Condensate Pump
2308	NC	HPCI Turbine Control Auxiliary Oil Pump
3903	3	Diesel Generator Cooling Water Pump
5203	NC	Diesel Generator Fuel Oil Transfer Pump

Quad Cities Nuclear Power Station, Units 1 and 2
INSERVICE TESTING PROGRAM

RELIEF REQUEST
NUMBER: RP-00A (Sheet 2 of 4)

Test Requirement

In accordance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, "Analysis and Evaluation," if deviations fall within the alert range of Table 3a, "Ranges for Test Parameters," for pump vibration, the frequency of pump testing specified in paragraph 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected. If the deviations fall within the required action range of Table 3a for vibration, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected.

Basis for Relief

10 CFR 50.55a requires inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (i.e., the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested and granted by the NRC, as described in the station IST Program. 10 CFR 50.55a(a)(3)(ii) allows for alternatives to the requirements of 10 CFR 50.55a(f) if conformance with the proposed alternatives would provide an acceptable level of quality and safety, and compliance with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," which is not currently referenced in 10 CFR 50.55a, allows that in cases where the pump's test parameters are either within the alert or required action ranges of Table ISTB 5.2.1-1, Table ISTB 5.2.1-2, Table ISTB 5.2.2-1 or Table ISTB 5.2.3-1, and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. This paragraph also states that the analysis shall include both a pump level and a system level verification of pump operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data.

It is an unnecessary hardship to replace or repair a pump that is still operating within component and system acceptable parameters as determined through analysis. The repair or replacement involves rendering the associated subsystem inoperable and unavailable. Replacement or repair of a pump, in this condition, unnecessarily increases the unavailability of the pump and its associated subsystem and is not consistent with availability goals established in accordance with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." To provide reasonable assurance of a pump's operational readiness in this condition, the analysis will include system requirements, pump hydraulic data, comparison of the current vibration spectrum with the baseline vibration spectrum, an evaluation of the trend of available overall

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vibration amplitudes and spectra, comparison with like pumps used in similar applications, and the determination of the need for corrective action. The analysis will also provide reasonable assurance that the degradation mechanism will not cause further degradation such that, before the next pump test or before repairs can be performed, the pump would fail.

Compliance with ASME/ANSI OMa-1988, Part 6, Paragraph 6, results in a hardship without a compensating increase in safety. The proposed alternative provides an acceptable level of quality and safety since the proposed analysis provides reasonable assurance of the operational readiness of the pumps and is consistent with the allowance, in paragraph 4.6 of OM-6, to establish new reference values after an analysis is performed.

Alternative Test

ComEd proposes to implement ASME OM Code – 1995, Subsection ISTB, Paragraph 4.6, "New Reference Values," for vibration measurements for all of the pumps in the IST program. In cases where the pump's vibration test parameters are within the alert or required action ranges and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established, instead of doubling the test frequency. The proposed analysis shall include verification of the pump's operational readiness, both a pump level and a system level analysis of operational readiness including the ability of the pump to meet design limits, the cause of the change in pump performance, vibration spectrum analysis including a comparison of current vibration spectrum with baseline vibration spectrum, and an analysis of all recent available trend data including overall vibration amplitude and spectra. The proposed analysis of the pump's operational readiness shall also take into consideration the accident mitigation function of the affected pump, including post-accident environmental conditions and the time period the pump is required to operate to fulfill its accident mitigation function. The vibration data will be compared with like pumps and similar applications to ensure pump performance is bounded by vibration performance of pumps that are not operating in the alert or required action range. The new reference value will not exceed the highest existing reference values for like pumps in similar applications.

If the cause of the higher vibrations cannot be determined, or if the data shows a continuing trend such that the condition of the pump may continue to degrade until it can no longer fulfill its function, the pump will be placed on double test frequency until the condition is corrected. The analysis shall also include a determination of the need for corrective action. The results of the analysis will be documented in the record of tests.

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As long as pump performance vibration remains within the range of acceptable performance defined by satisfactorily operating like pumps in similar applications, no limits are placed on the number of times that reference values may be adjusted by analysis. This is considered to be acceptable since precision balanced, smooth running pumps may have vibration levels that are orders of magnitude better than satisfactorily performing like pumps in similar applications. The restriction on setting new reference values above existing reference values for like pumps in similar applications will preclude raising reference values to unacceptable levels, thereby preventing continual adjustment of the reference values. As a result, assurance will be provided that the design basis function of the pumps will be maintained.